Parallels Remote Application Server

Administrator's Guide

v15.5 Update 2

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Contents

CHAPTER 1

Introduction

Welcome to Parallels Remote Application Server, an integrated solution to virtualize your applications, desktops and data. Parallels Remote Application Server publishes applications and delivers remote and virtual desktops to any device on your network, anywhere.

In This Chapter

About Parallels Remote Application Server

Parallels Remote Application Server provides vendor independent virtual desktop and application delivery from a single platform. Accessible from anywhere with platform-specific clients and web enabled solutions, like the Parallels RAS HTML5 Gateway, Parallels Remote Application Server allows you to publish remote desktops, applications and documents within a virtual environment, improving desktop manageability, security and performance.

Parallels Remote Application Server extends Windows Terminal Services by using a customized shell and virtual channel extensions over the Microsoft RDP protocol. It supports all major hypervisors from Microsoft, VMware, and other vendors enabling the publishing of virtual desktops and applications to Parallels Client.

The product includes powerful universal printing and scanning functionality, as well as high capacity resource based load balancing and management features.

With Parallels Client Manager Module for Parallels Remote Application Server you can also centrally manage user connections and PCs converted into thin clients using the free Parallels Client.

How does it work?

When a user requests an application or a desktop, the system finds a least loaded terminal server or a guest VM on one of the least loaded VDI hosts and establishes an RDP connection with it. Using Microsoft RDP protocol, the requested application or desktop is presented to the user.

Users can connect to Parallels Remote Application Server using Parallels Client (available at no charge), which can run on Windows, Linux, macOS, Android, Chrome, and iOS. Users can also connect via an HTML5 browser or Chromebook.

As newer versions of Windows keep on being developed as time goes by, you need to defend the migration cost to your business. Parallels Remote Application Server can help. Desktop replacement allows you to extend the lifespan of your hardware and delay migration to the latest OSs to a time that suits you best. The Parallels Remote Application Server solution allows you to be very flexible: you can lock machine configurations on the user side, placing your corporate data in an extremely secure position; or you can opt to allow users to run some local and remote applications. Parallels Client Desktop Replacement is able to reduce the operability of the local machine by disabling the most common local configuration options, while guaranteeing the same level of service and security afforded by thin clients, directly from your existing PCs.

About This Guide

This guide is intended for system administrators responsible for installing and configuring Parallels Remote Application Server. This guide assumes that the reader is familiar with Microsoft Terminal Server and has an intermediate networking knowledge.

Terms and Abbreviations Used in This Guide

The following terms and abbreviations are used in this guide:

Term/Abbreviation	Description
RAS Console	Parallels Remote Application Server Console. The RAS Console is the primary interface you use to configure, manage, and run Parallels Remote Application Server. As an administrator, you use the RAS Console to manage farms, sites, terminal servers, published resources, client connections, etc.
Category	In the RAS Console, categories are displayed in the left pane of the main interface. Each category consists of a number of settings related to a specific task or operation. The categories include Start, Farm, Load Balancing, Publishing, Universal Printing, Universal Scanning, Connection, Client Manager, and others.
Farm	A Parallels RAS farm is a logical grouping of objects for the purpose of centralized management. A farm configuration is stored in a single database which contains information about all objects comprising the farm. A farm consists of at least one site, but may have as many sites as necessary.
Site	A site consists of at least one RAS Publishing Agent, RAS Secure Client Gateway (or multiple gateways), and RAS agents installed on Terminal Servers, virtualization (VDI) hosts, and Windows PCs. Note that a given Terminal Server, VDI host, or PC can be a member of only one site at any given time.

Licensing Server Site	The site where the main configuration database is stored and manages all other sites in the RAS farm. Other servers in a site can be upgraded to Licensing Server if the main licensing server is not available. **Note:** Upgrades of the Parallels Remote Application Server MUST be applied to the licensing server site first.
RAS Secure Client Gateway	RAS Secure Client Gateway tunnels all traffic needed by applications on a single port and provides secure connections.
HTML5 Client	HTML5 client allows users to view and launch remote applications and desktops in a web browser**. The** HTML5 client functionality is a part of RAS Secure Client Gateway.
Publishing	The act of making items installed on a Remote Desktop Server, VDI host or Remote PC available to the users via the Parallels Remote Application Server.
RAS Publishing Agent	RAS Publishing Agent provides load balancing of published applications and desktops.
RAS Terminal Server Agent	RAS Terminal Server Agent collects information from the MS RDS hosts required by the Publishing Agent and transmits to it when required.
RAS PC Agent	RAS PC Agent collects information from Remote PC hosts required by the Publishing Agent and transmits to it when required.
RAS Guest VM Agent	RAS Guest VM Agent collects information from the VDI desktop required by the Publishing Agent and transmits to it when required.
RAS VDI Agent	RAS VDI Agent collects information from the Parallels Remote Application Server Infrastructure and is responsible for controlling VDI through its native API. It also acts as a gateway between the Secure Client Gateway or the client in direct mode and the RDP server from the guest VM or VDI depending on VDI implementation.
RAS Web Portal	RAS Web Portal is a web page with auto client detection and a client distribution point. It provides access to published resources via web browser.
RDS	Remote Desktop Services is a Microsoft Windows component that makes applications and the entire desktop of a server running RDS accessible to a remote client device that supports Remote Desktop Protocol (RDP). RDS replaced Terminal Services beginning with Windows 2008 R2.
Terminal Services	See **RDS** above.
HALB	HALB (High Availability Load Balancing) is a software solution that sits between users and Parallels Secure Client Gateways. Many HALB appliances can run simultaneously, one acting as the master and the

	others as slaves. The higher the number of HALB appliances available, the lower the probability that users will experience downtime. Master and slave appliances share a common or virtual IP, also known as VIP. Should the master HALB appliance fail, a slave is promoted to master and takes its place seamlessly without affecting the end user's connection.

CHAPTER 2

Installing Parallels Remote Application Server

This chapter describes how to install and activate Parallels Remote Application Server.

In This Chapter

System Requirements

Before installing Parallels RAS, please verify that your hardware and software meet or exceed the following requirements.

Hardware Requirements

Parallels Remote Application Server is extensively tested on both physical and virtual platforms. The minimum hardware requirements approved to run Parallels Remote Application Server are outlined below.

- Physical Machines – Dual Core Processor and a minimum of 4GB RAM.
- Virtual Machines – Two Virtual Processors and a minimum of 4GB of virtual hardware memory.

The server hardware requirements to install and configure Parallels Remote Application Server can vary according to end-user requirements.

Typically for an installation of 30 users or under, Parallels Remote Application Server can be installed on one high specification server and the resources published directly from it. For more than 30 users, multiple servers may be required.

The below should be considered during the planning stage of a Parallels Remote Application Server deployment:

- High specification servers should be used, consisting of multiple CPU cores, a high specification disk transfer rate and plenty of RAM.

- A hypervisor-based virtual machine can be used as long as the resources required by the end-users are calculated accordingly.
- Terminal servers should not exceed 50 users per terminal server in usage.
- The Secure Client Gateway should not exceed 200 users per server for incoming connections.
- When planning VDI Hypervisor resource requirements, extra requirements such as RAM usage per virtual machine and disk space should be taken into account.

For port requirements, please see the **Port Reference** section (p. 241).

Software Requirements

Core Parallels Remote Application Server Components

RAS Publishing Agent and RAS Secure Client Gateway (the core components of Parallels Remote Application Server) must be installed on one of the following versions of Windows Server:

- Windows Server 2008
- Windows Server 2008 R2
- Windows Server 2012
- Windows Server 2012 R2
- Windows Server 2016

Note: Parallels Remote Application Server should not be installed on a domain controller or any other server where a DHCP server is running.

RAS Terminal Server Agent

RAS Terminal Server Agent must be installed on one of the following versions of Windows Server:

- Windows Server 2003 SP1 and newer
- Windows Server 2008
- Windows Server 2008 R2
- Windows Server 2012
- Windows Server 2012 R2
- Windows Server 2016

Parallels Client

Parallels Client is approved for the following operating systems (both 32 bit and 64 bit systems are supported, where applicable):

- Windows XP SP3, Vista, 7, 8.x, 10

- Windows Server 2003 SP1 and newer
- Windows Embedded
- macOS 10.7.3 and newer
- iOS 7.0 and newer (iPhone and iPad)
- Android 2.2 and newer
- Chrome OS
- Ubuntu 12.04 LTS
- Ubuntu 14.04 LTS
- Open Suse 12.3
- OpenSuse 13.2
- Fedora 20
- Xubuntu 15.10
- Raspbian OS Wheezy
- Raspbian OS Jessie

Install Parallels Remote Application Server

To install Parallels Remote Application Server:

1. Before proceeding, make sure that you are logged in to the computer where you'll be performing the installation with an account that has administrative privileges.
2. Download the latest version of Parallels Remote Application Server from the Parallels website.
3. Double click the `RASInstaller.msi` file to launch the Parallels Remote Application Server installation wizard.
4. Read the info on the **Welcome** page of this wizard and click **Next**.
5. Review and approve the end-user license agreement and click **Next**.
6. Specify the folder location where Parallels Remote Application Server will be installed and click **Next**.
7. Select the installation type:
   - Select **Parallels Remote Application Server** to run the default installation, which will install all necessary components for a fully functional Parallels RAS farm.
   - Select **Custom** to install only the components that you need. You can specify the components you wish to install after clicking **Next**.
8. Click **Next**.
9. Review the notice on the **Important Notice** wizard page. If there's a port conflict on your computer, this information will be displayed here. You can resolve the conflict later.

10 Click **Next**.

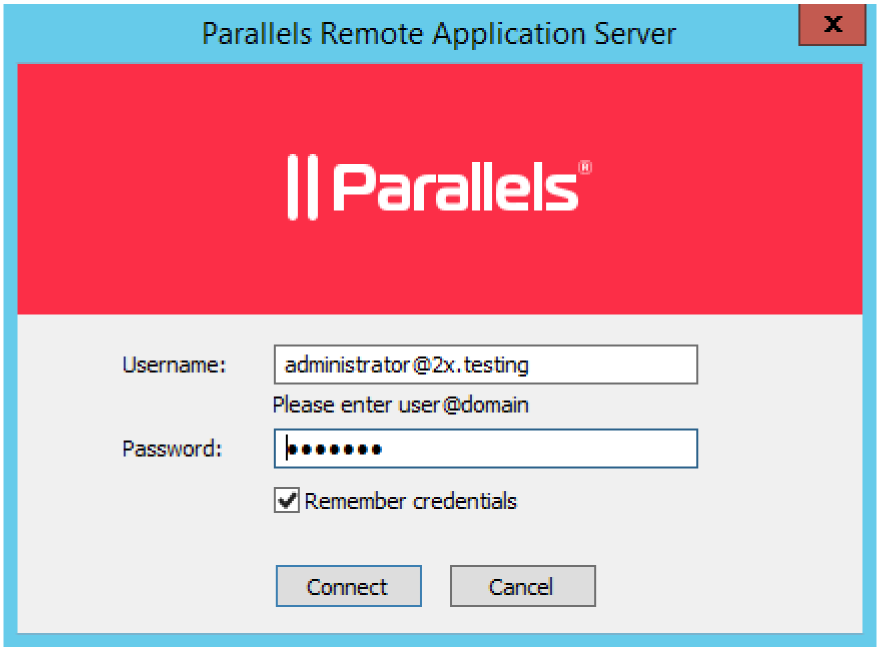
11 On the **Firewall Settings** page, select **Automatically add firewall rules** to configure the firewall on this computer for Parallels RAS to work properly.

12 Click **Next** and then click **Install**.

13 Wait for the installation to finish and click **Finish**.

Log in to Parallels RAS Console for the first time

The first time the Parallels RAS Console is launched, you need to specify credentials of a user with administrative privileges (usually a domain or local administrator). The user name must be specified using the UPN format (e.g. `administrator@domain.local`). The specified user will be automatically configured as the Parallels Remote Application Server administrator.



Username: administrator@2x.testing

Please enter user@domain

Password: ●●●●●●●

☑ Remember credentials

Enter the username and password and click **Connect**. The **Sign In to Parallels My Account** dialog opens. Read on.

Sign In to Parallels My Account

To activate Parallels RAS, you must register for Parallels My Account. When you run the RAS console for the first time, you'll see the **Sign In to Parallels My Account** dialog. If you already have an account, type the email address and password you used to register the account and click **Sign In**.

If you don't have a Parallels My Account, you can register for one as follows:

1 In the **Sign In to Parallels My Account** dialog, click **Register**. The **Register Parallels My Account** dialog opens.

If you have an existing 2X Remote Application Server license and are upgrading to the new Parallels Remote Application Server, the **Register Parallels My Account** dialog will be prefilled with the information from your existing license. If you don't have an existing license (or if you've installed Parallels Remote Application Server on a new server), you'll need to fill in the registration information as described in the next step.

2 Enter your name, email address, a desired password, and your company info (all fields are required).

3 Click **Register** to register an account. This will create a personal account for yourself and a business account for your organization to which you will be assigned as administrator.

If you are upgrading an existing 2X license, the **Migrating license key** window will open and your license will be migrated to the new Parallels Remote Application Server format. When the migration is completed, your upgraded license key will be registered with Parallels My Account and your Parallels Remote Application Server will be activated.

If you don't have an existing 2X license, you should see the confirmation message saying that your account has been registered successfully. Click **OK** to close the message box. In the **Sign In to Parallels My Account** dialog, provide the email address and password and click **Sign In**. You'll see the **Activate Product** dialog.

Read on to learn how to activate Parallels Remote Application Server.

Activate Parallels Remote Application Server

After you sign in to Parallels My Account, the **Activate Product** dialog opens asking you to activate Parallels Remote Application Server.

If you already have a Parallels Remote Application Server license key, select the **Activate using license key** option and enter the key in the field provided. You can click the button next to the field to see the list of subscriptions and/or permanent license keys you have registered in Parallels My Account. If the list is empty, it means that you don't have any subscriptions or license keys and need to purchase one first.

Note: You can manage your Parallels RAS license using the **Licensing** category in the Parallels RAS console. The management tasks include viewing the license information, switching to a different Parallels My Account, and activating Parallels RAS using a different license key. For more information, please see the **Licensing** section (p. 231).

If you don't have a Parallels RAS subscription or license key, you have the following options:

- Purchase a subscription online by clicking the **Purchase a license** link.
- Activate Parallels RAS as a trial by selecting the **Activate trial version** option.

After entering a license key (or selecting to activate a trial version), click **Activate**. You should see a message that your Parallels Remote Application Server was activated successfully. Click **OK** to close the message box. The Parallels Remote Application Server Console opens:

1 First, a dialog is displayed informing you that you have no active servers configured. This means that to begin using Parallels RAS, you need at least a Terminal Server and you also need to publish applications, desktops or other resources for your users. We'll get to that at the end of this section.

2 Click **OK** to close the message box.

3 You will then see the **Applying Settings** dialog. Wait for the initial configuration of Parallels RAS to complete and click **OK**.

4 You will now be taken to the Parallels Remote Application Server console where you can begin configuring your Parallels RAS installation.

Read on to learn how to add a Terminal Server, publish resources, and invite your users to Parallels RAS.

CHAPTER 3

Getting Started with Parallels Remote Application Sever

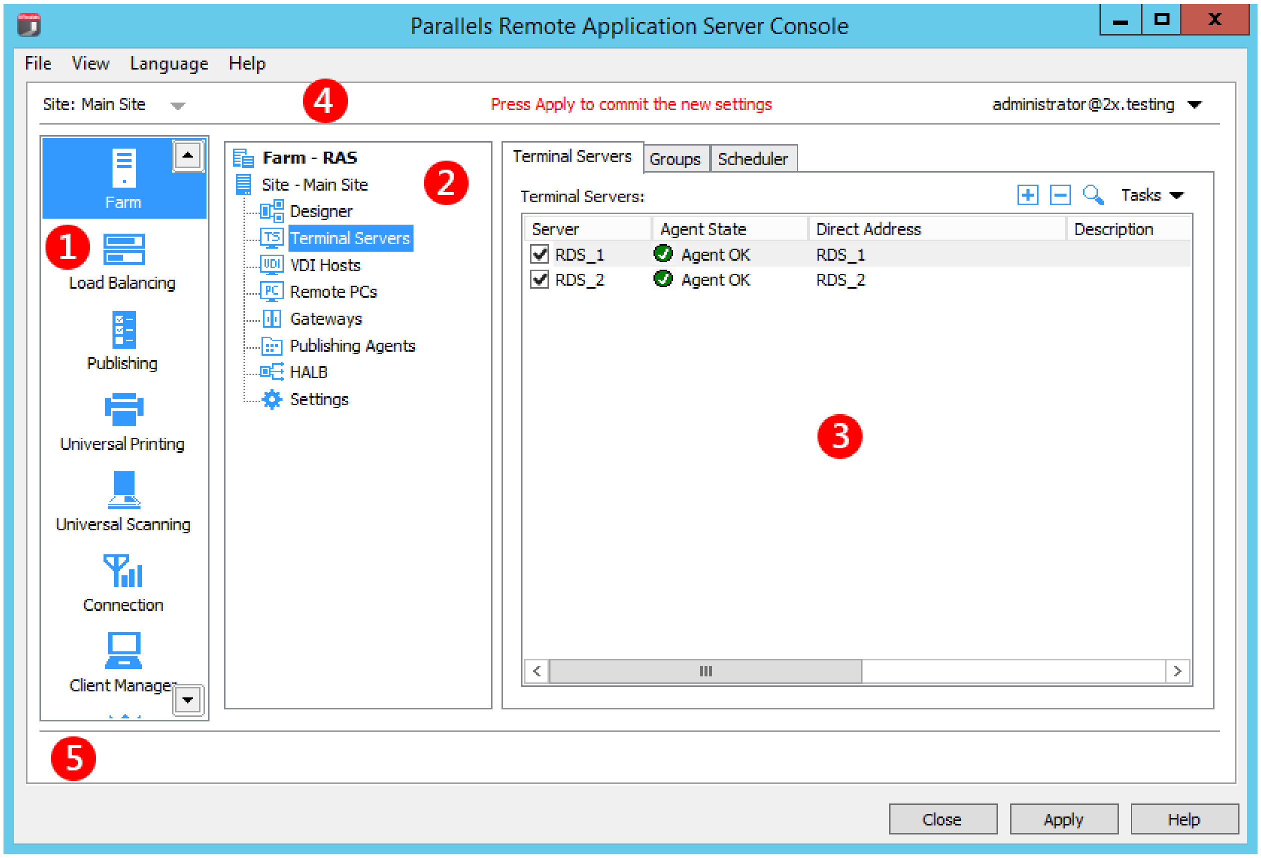
This chapter will help you get started with Parallels Remote Application Server. Read it to learn how to use the Parallels RAS Console and how to set up a simple RAS environment.

In This Chapter

Parallels Remote Application Server Console

The Parallels RAS Console is where you manage Parallels Remote Application Server. Use the console to publish an application or a desktop, add a terminal server of a VDI host to the farm, backup the Parallels Remote Application Server configuration, and perform other administrative tasks.

Parallels Remote Application Server Console Layout



Press Apply to commit the new settings

Terminal Servers:

Server	Agent State	Direct Address	Description
☑ RDS_1	✓ Agent OK	RDS_1	
☑ RDS_2	✓ Agent OK	RDS_2	

The RAS Console consists of the following sections:

1. This section lists categories. Selecting a category will populate the right pane with elements relevant to this category.

2. This section becomes available only for the **Farm** and the **Publishing** categories. The navigation tree allows you to browse through the objects related to that category.

3. This section displays the selected object or category properties, such as servers in a farm or published application properties.

4. This information bar displays the site you are currently logged into and the user account being used for the connection. Please also note the "Press Apply to commit the new settings" message in the middle (in red). The message is displayed when you made changes to one or more objects/items, but did not commit them to Parallels Remote Application Server. Click the **Apply** button (at the bottom of the screen) to commit the changes. If there are no currently pending changes, the message is not displayed.

5 The information bar at the bottom of the screen is used to display the most recent console notification (if one is available).

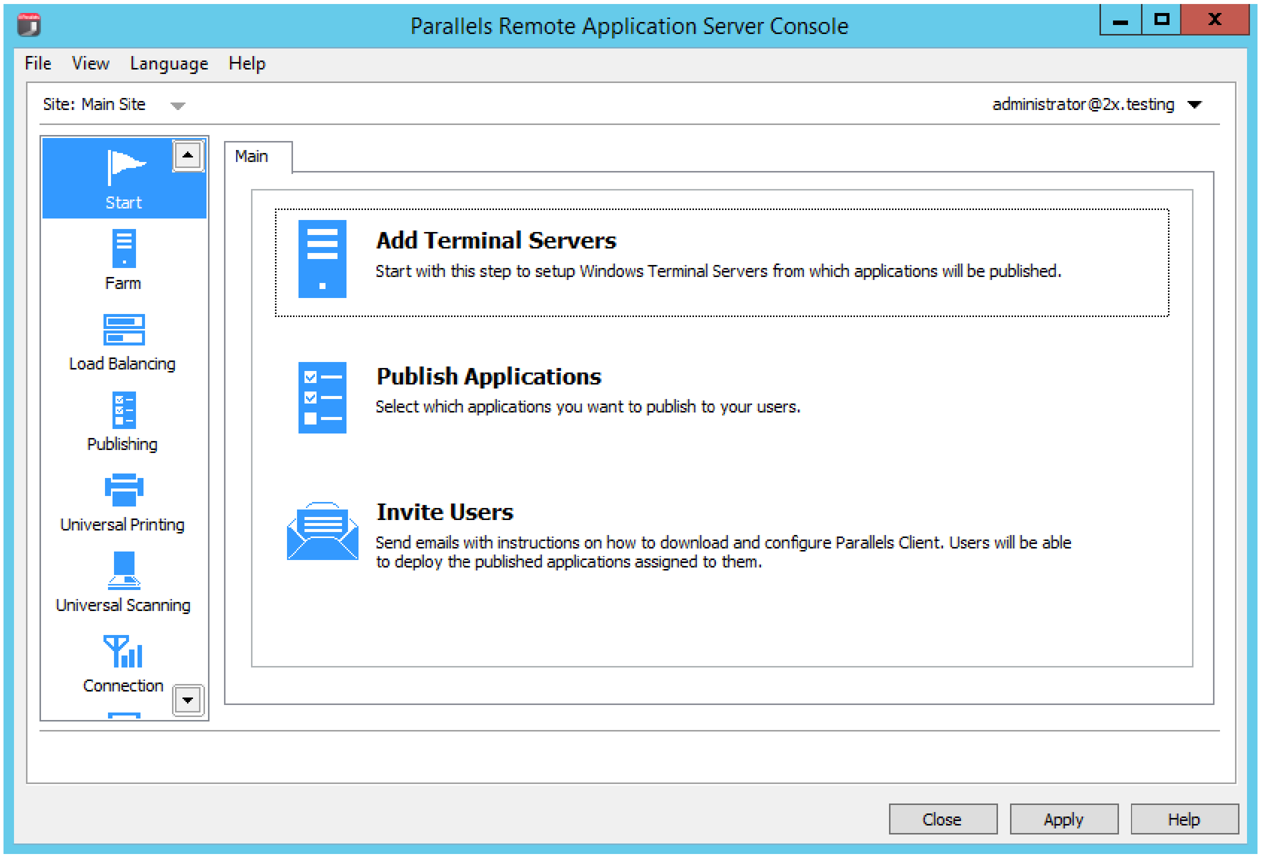
Setting Up a Simple RAS Environment

In this section, we'll set up a simple Parallels Remote Application Server environment where all required components run on a single server. Once you are familiar with basic principles of setting up a Parallels RAS environment, you can use the instructions as a basis for setting up a more advanced environment according to your needs.

To set up a Parallels RAS environment:

1 Log in to the Parallels Remote Application Server console.

2 In the console, select the **Start** category. This category gives you access to three wizards that you can use to easily perform essential tasks, such as adding terminal servers, publishing applications, and inviting users to Parallels RAS.



Add Terminal Servers
Start with this step to setup Windows Terminal Servers from which applications will be published.

Publish Applications
Select which applications you want to publish to your users.

Invite Users
Send emails with instructions on how to download and configure Parallels Client. Users will be able to deploy the published applications assigned to them.

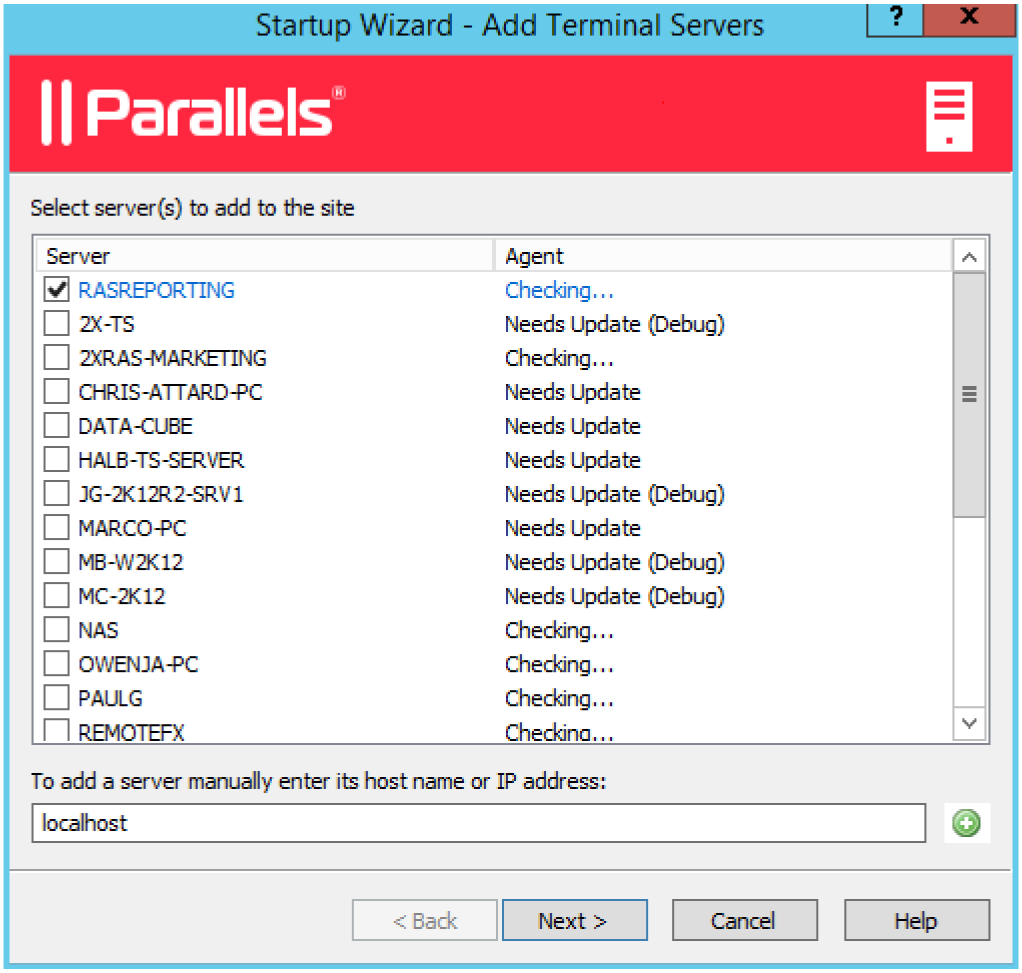
Add a Terminal Server

First, we need to add a Terminal Server to the site. In this tutorial, we'll add the local server, on which Parallels Remote Application Server is installed, as a Terminal Server.

Note: A Terminal Server serves published resources (applications, desktops, and others) to Parallels RAS users via Remote Desktop Services. In order to access these resources, each user connecting to Parallels RAS must be a member of the Remote Desktop Users group on the server hosting the resources (i.e. the Terminal Server). Before inviting your users to connect to Parallels RAS, you need to add all your users to the local Remote Desktop Users group on the Terminal Server. For the instructions on how to do it, please consult the Microsoft Windows documentation.

To add a Terminal Server to the site:

1 Click the **Add Terminal Servers** item. The **Add Terminal Servers** wizard opens.



Select server(s) to add to the site

Server	Agent
☑ RASREPORTING	Checking...
□ 2X-TS	Needs Update (Debug)
□ 2XRAS-MARKETING	Checking...
□ CHRIS-ATTARD-PC	Needs Update
□ DATA-CUBE	Needs Update
□ HALB-TS-SERVER	Needs Update
□ JG-2K12R2-SRV1	Needs Update (Debug)
□ MARCO-PC	Needs Update
□ MB-W2K12	Needs Update (Debug)
□ MC-2K12	Needs Update (Debug)
□ NAS	Checking...
□ OWENJA-PC	Checking...
□ PAULG	Checking...
□ REMOTEFX	Checking...

To add a server manually enter its host name or IP address: localhost

2 On the first page, select the local server in the list or type the host name in the edit box at the bottom of the page and then click the plus-sign icon.

3 Click **Next**.

4 On the next page, you can specify whether the firewall should be configured on the server and the RDS role should be installed (and some others). Keep the default values and click **Next**.

5 Review the settings and click **Next**.

6 The **Install Terminal Server Agent** dialog opens. When the Terminal Server Agent is installed on the server, click **Done** to close the dialog.

7 Click **Finish** to close the wizard.

If you would like to verify that the Terminal Server has been added to the site, click the **Farm** category (below the **Start** category) and then click **Terminal Servers** in the navigation tree (the middle pane). The server should now be included in the **Terminal Servers** list. The **Agent State** column may display a warning message. If it does, reboot the server. The **Agent State** column should now say, "Agent OK", which means that your Terminal Server is fully operational.

Publish an Application

Now that you have a Terminal Server, you need to publish an application that it will serve to the users. In this example, we'll publish the RAS Console application (you can publish any other application that's available on your server).

To publish an application:

1 Click the **Publish Applications** item.

> **Note:** If you see a message box saying that there are no servers available, make sure that you added the server as a Terminal Server to the site and then restarted it.

2 The **Publish Applications** wizard opens.

3 The first page of the wizard will not be displayed if you have just one Terminal Server. If you have more than one Terminal Server, the page will be displayed and you can select the Terminal Server(s) from which the application should be published. For instance, you can select the **Individual Servers** option and then select the local server in the list.

4 On the next page, navigate to **Parallels** / **Parallels Remote Application Server** and select the **Parallels Remote Application Server Console** application (or any other application that you want to publish).

If you have more than one Terminal Server and select more than one server on the previous screen, the **Show applications not available on all target servers** option becomes enabled. If the option is cleared (default), the directory tree will contain applications that are available on each and every server that you selected. If the option is selected, the tree will contain applications that may be available on some server(s), but not on the others.

5 Click **Next**. Review the summary information and click **Next** again.

6 Click **Finish** when ready.

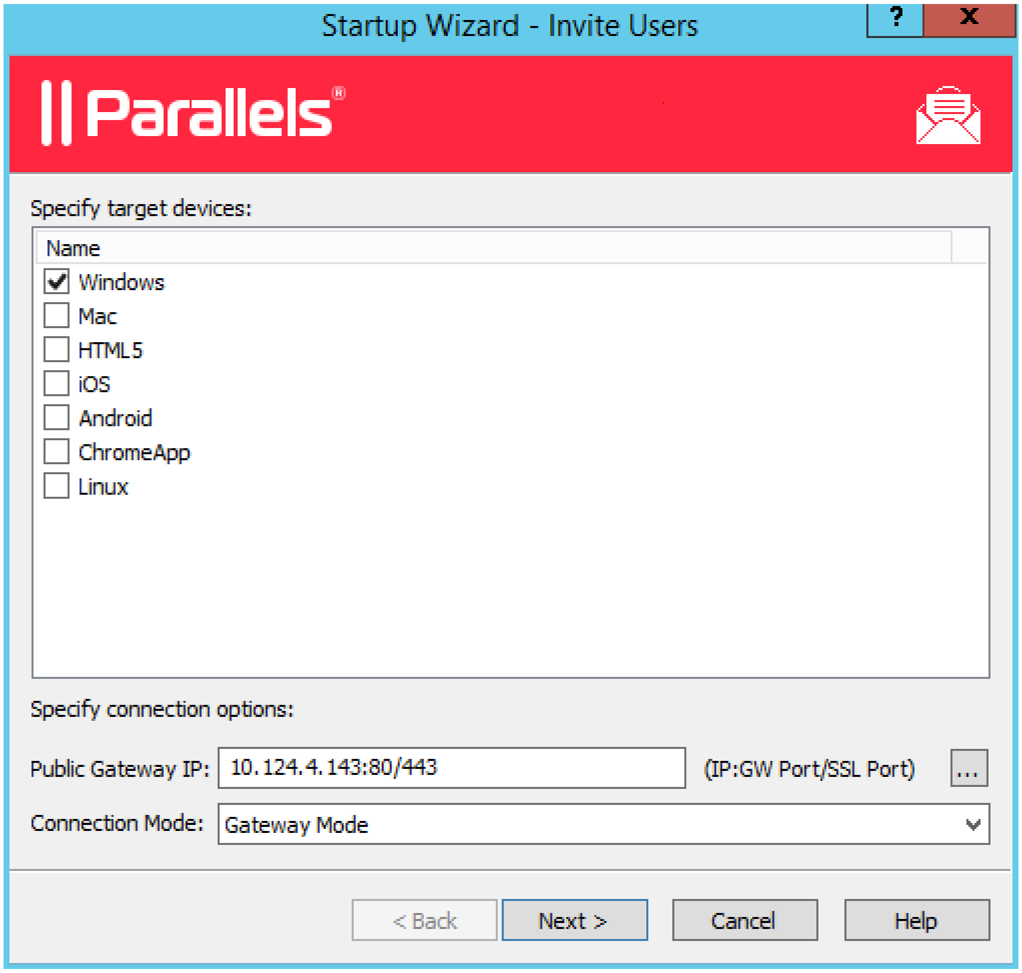
7 To verify that the application has been published, select the **Publishing** category and see that the **Parallels Remote Application Server Console** application is present in the **Published Resources** list (the middle pane).

Invite Users

Your Parallels RAS environment is now fully operational. You have a Terminal Server and a published application. All you need to do now is invite your users to install the Parallels Client software on their devices, which will enable them to use the published application.

To invite users:

1. Click the **Invite Users** item. The **Invite Users** wizard opens.
2. If you haven't configured anything yet in your Parallels RAS installation, the first wizard page will prompt you to configure a mailbox for sending notifications to your users.
3. Enter your outgoing mail server name and sender address (e.g. your email address). Choose whether to use the TLS/SSL protocol and whether your SMTP server requires authentication (provide the username and password if it does). You can also send a test email to test your outgoing mail server settings.
4. Click **Next**.
5. On the next page of the wizard, specify target devices and connection options:



Startup Wizard - Invite Users

Specify target devices:

Name
☑ Windows
□ Mac
□ HTML5
□ iOS
□ Android
□ ChromeApp
□ Linux

Specify connection options:

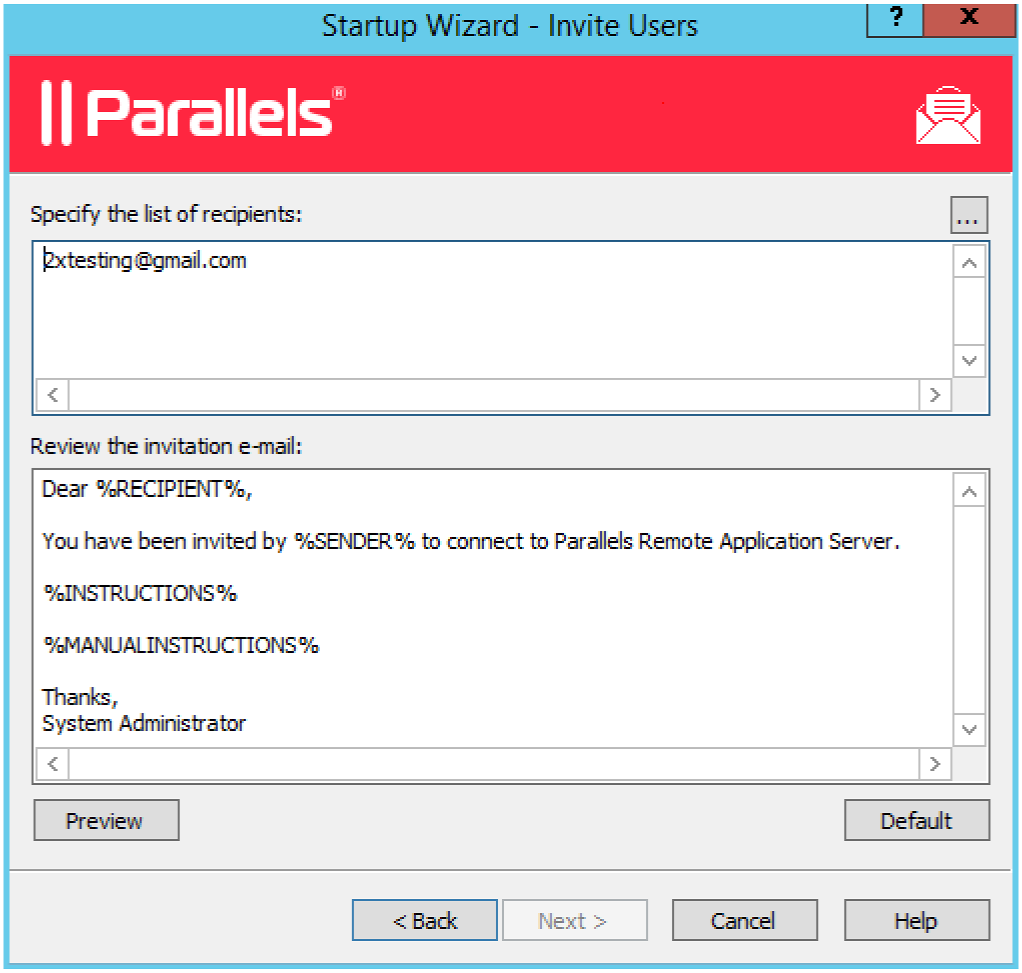
Public Gateway IP: 10.124.4.143:80/443 (IP:GW Port/SSL Port)

Connection Mode: Gateway Mode

- In the target devices list, select the types of devices to send an invitation to. Each target device of a particular type will receive an email with instructions on how to download, install, and configure the Parallels Client software on that device type.
- In the **Public Gateway IP** field, specify the RAS Secure Client Gateway domain name or IP address. Please note that this can be a public IP address in order to reach the system from a remote user. You can click the **[...]** button to select a gateway from the list.
- In the **Connection Mode** drop-down list, select the RAS Secure Client Gateway connection mode. Please note that SSL modes require the gateway to have SSL configured.
- Click the **Advanced** button to open the **Advanced Settings** dialog. This dialog allows you to specify a third-party credential provider component. If you use such a component to authenticate your users, specify its GUID on this dialog. For more information, see **Configure Client Policy Options** > **Single Sign-On** (p. 200).

6 Click **Next**.

7 On the next page, specify the email recipients. Click the **[...]** button to select users or groups.



Specify the list of recipients:

2xtesting@gmail.com

Review the invitation e-mail:

Dear %RECIPIENT%,

You have been invited by %SENDER% to connect to Parallels Remote Application Server.

%INSTRUCTIONS%

%MANUALINSTRUCTIONS%

Thanks,
System Administrator

8 Review the invitation email template displayed in the **Review the invitation e-mail** box. You can modify the template text as needed. The template also uses variables, which are explained below.

- `%RECIPIENT%` — Specifies the name of a recipient to whom the email message is addressed.
- `%SENDER%` — The sender's email address that you specified in the first step of this wizard when you configured the outgoing email server settings.
- `%INSTRUCTIONS%` — Includes a script for automatic configuration of Parallels Client and a link that will run it.
- `%MANUALINSTRUCTIONS%` — Includes instructions for manual configuration of Parallels Client.

The variables are defined dynamically depending on the type(s) of the target devices and other settings. Normally, you should always include them in the message, so your users will receive all the necessary instructions and links. To preview the message, click the **Preview** button. This will open the HTML version of the message in a separate window. This is the email message that your users will receive.

9 Click **Next**, review the settings that you specified, and click **Next** again to send the invitation email to the selected users.

After you send the invitation email to your users, they'll be able to follow the instructions in it and install Parallels Client on their devices. They will then be able to connect to Parallels Remote Application Server and use the application that you published for them.

Conclusion

In this tutorial, we have configured a simple Parallels Remote Application Server environment consisting of one Terminal Server and one published application. We then configured a mailbox for outgoing emails and sent an invitation email to our users with instructions on how to: install Parallels Client; connect to Parallels Remote Application Server; and run the published application remotely. In other words, we successfully created a fully functional Parallels Remote Application Server farm serving remote applications to end users.

If you wish, you can repeat the tutorial and add more Terminal Servers or publish more applications, or send an invitation email to users who use different types of devices. The instructions remain essentially the same.

Naturally, Parallels Remote Application Server is not limited to the functionality demonstrated in this short tutorial. Continue reading this guide to learn what Parallels Remote Application Server can do for you.

CHAPTER 4

Parallels RAS Farm and Sites

Parallels RAS farm is a logical grouping of objects for the purpose of centralized management. A farm configuration is stored in a single database which contains information about all objects comprising the farm. A site is the next level grouping in the farm hierarchy which contains servers and other objects providing connection and remote application services.

In This Chapter

About Sites

A Parallels RAS farm consists of at least one site, but may have as many sites as necessary.

Sites are often used to separate management and/or location functions. For example, by creating a site, you can delegate permissions to a site admin without granting them full farm permissions. Or you can have separate sites for different physical locations with the ability to copy the same settings to each site while using Terminal Servers, VDI hosts, or PCs that are closer to end users or (depending on your needs) to back-end servers. For instance, it would make sense for a client/server application querying a database to be published from a Terminal Server which is located closer to the database server.

Each site is completely isolated from other sites within the same farm. The farm simply groups the sites logically and stores configuration properties of each site (and the objects that comprise it) in a single database. Sites don't communicate with each other and don't share any objects or data. The only exception to this rule is the RAS Licensing Server site which periodically communicates with other sites to obtain statistics.

Individual object settings in a given site can be replicated to all other sites. This does not mean that the settings will be shared between sites. The settings that you choose will simply be applied to other sites. For more information, see the **Managing Sites** section (p. 31).

When you install Parallels Remote Application Server for the first time, a farm with a single site is created automatically. This first site becomes the RAS Licensing Server site and the host for the main Parallels RAS configuration database. When you add more sites to the farm, the data in this database is automatically synchronized with every site that you add. When changes are applied to a particular site, the main configuration database is automatically updated to reflect the changes.

Each site must have at least the following components installed:

- Master RAS Publishing Agent
- RAS Secure Client Gateway
- Terminal Server, VDI, or PC
- Published resources (applications, desktops, documents).

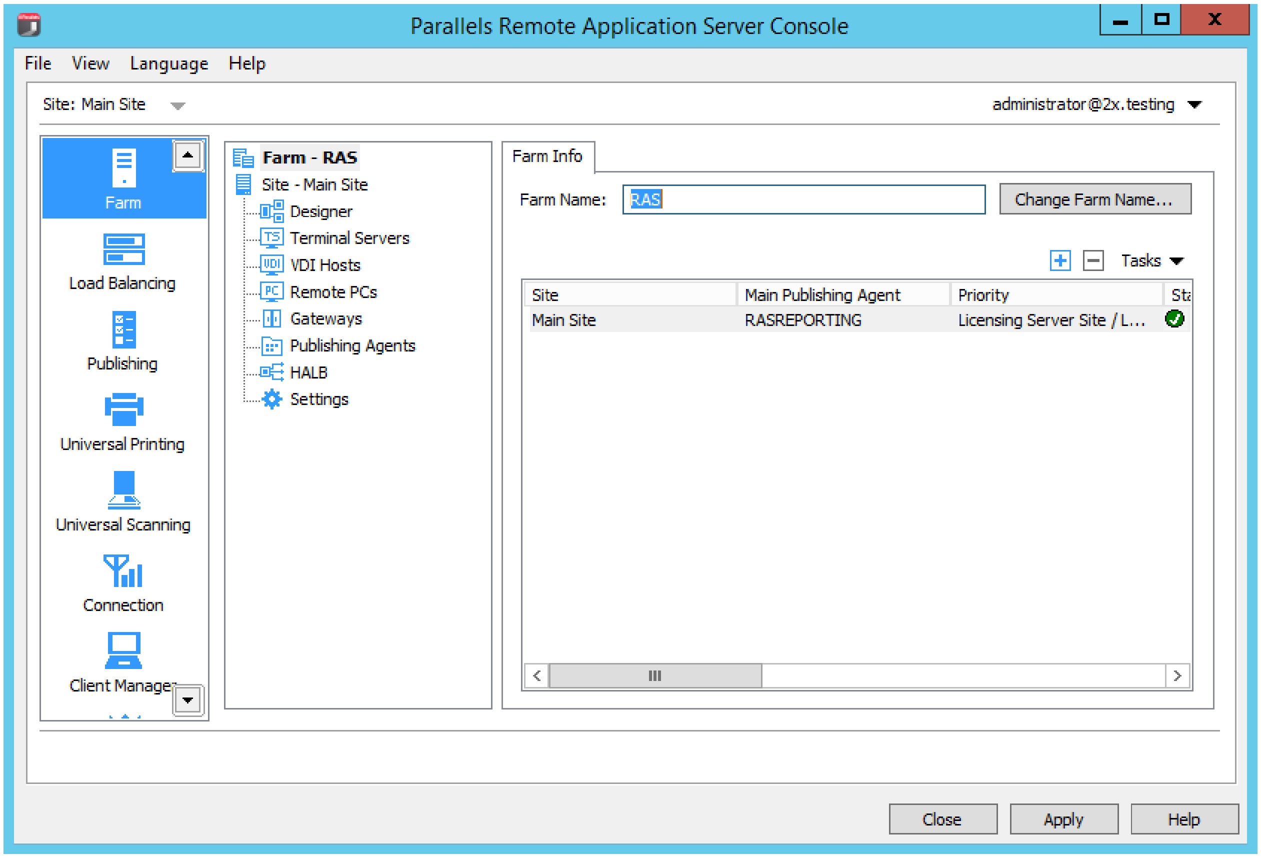
When you install Parallels RAS using default installation options, the master RAS Publishing Agent and the RAS Secure Client Gateway are automatically installed on the server on which you perform the installation. You can then add one or more Terminal Servers to the site and publish resources hosted by those servers. You can also add more sites to the farm if needed and configure individual components for each site as you desire.

Viewing Sites in the RAS Console

To view existing sites, open Parallels RAS Console and select the **Farm** category in the left pane. Existing sites are listed in the right pane.

Note: The **Farm** node will only be visible to an administrator who has full permissions to manage the farm. For more information about farm/site permissions, please refer to **Managing Farm Administrative Accounts** (p. 32).

The **Farm** category displays the configuration of only one site at a time. If you login as the farm administrator, the configuration of the Licensing Server site will be displayed. If you login as an administrator who has access to a specific site (but not the farm), the configuration of that site will be displayed. The site which configuration is currently displayed in the console is marked as "Current Site" in the **Priority** column. If you have multiple sites and want to manage one of them, right-click it in the right pane and choose **Switch to this Site**. The site configuration will be loaded into the RAS Console, so you can see its components and configure them as you require.



Site: Main Site

administrator@2x.testing

Farm Name: RAS

Site	Main Publishing Agent	Priority	Sta
Main Site	RASREPORTING	Licensing Server Site / L...	✓

To change the farm name, click the **Change Farm Name** button in the right pane. To change a site name, right-click it in the right pane and choose **Properties**. Type a new name and click **OK**.

The middle pane displays the components of the current site. We will talk more about each one of them later in this guide. The following list is a short overview:

- **Designer**. Displays a visual representation of the site. Use the icons at the top to add more components to the diagram (if you add a component, it will actually be added to the site). Click Print to print the diagram.
- **Terminal Servers**. Add, remove, and configure RAS Terminal Servers.
- **VDI Hosts**. Add, remove, and configure RAS VDI Hosts.
- **Remote PCs**. Add, remove, and configure Remote PCs.
- **Gateways**. Add, remove, and configure RAS Secure Client Gateways.

- **Publishing Agents**. Add, remove, and configure RAS Publishing Agents.
- **HALB**. Enable or disable High Availability Load Balancing.
- **Settings**. Configure general site settings.

Adding a Site to the Farm

To add a site to the farm:

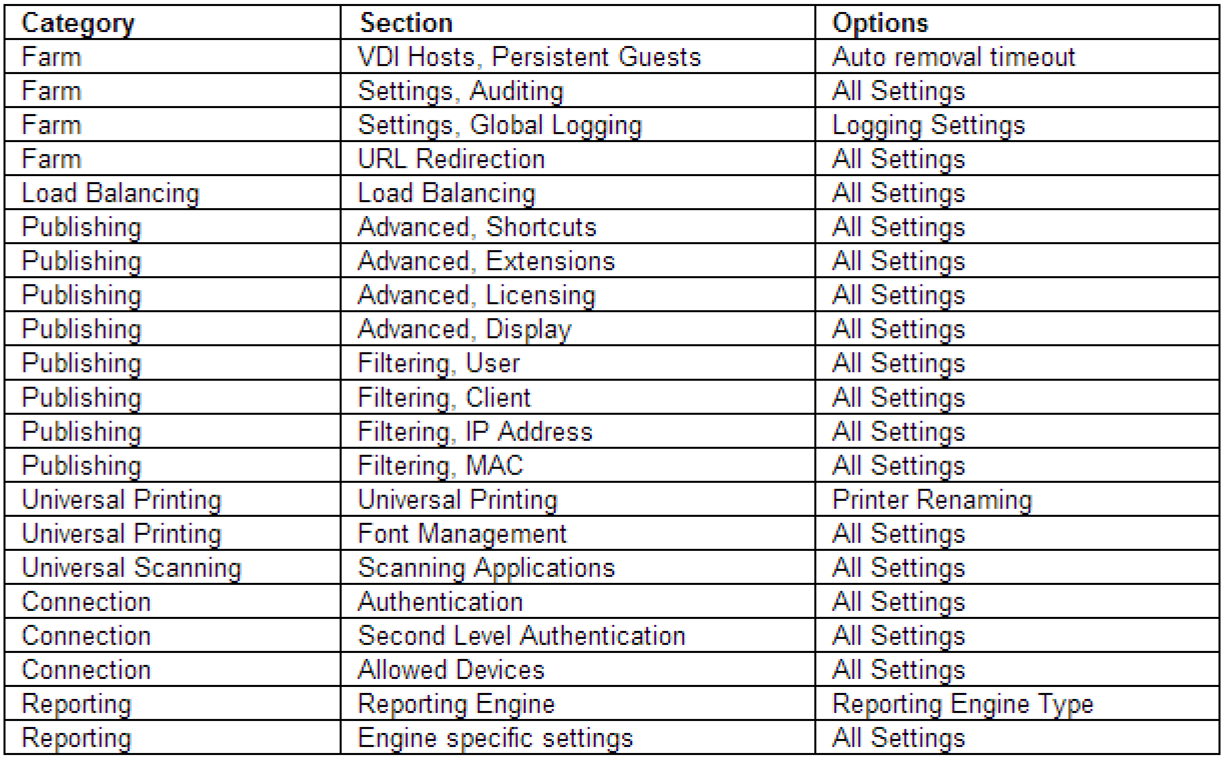
1. In the RAS Console, select the **Farm** category in the left pane and then select the farm in the middle pane.
2. In the **Tasks** drop-down menu (the right pane, above the Site list), click **Add** (or click the **+** icon).
3. In the **Add Site** dialog:
   - In the **Site** field, specify a site name.
   - In the Server field, specify the IP address or FQDN of the server where the Master Publishing Agent and Secure Client Gateway should be installed.
   - Select the **Add an SSL certificate and enable HTML5 Gateway** option to automatically create a self-signed certificate, enable SSL, and enable HTML5 support. For more info, please see **Enable HTML5 Support on the Gateway** (p. 135).
4. Click **Next**.
5. The **Site Master Properties** dialog opens. First, it verifies if RAS Publishing Agent is installed on the specified site server. If it isn't, it will indicate this in the **Status** field.
6. Click the **Install** button to install the agent.
7. In the **Install RAS Publishing Agent** dialog, highlight the server name on which the RAS Publishing Agent is to be installed.
8. (Optional) Select the option **Override system credentials** to specify and use different credentials to connect to the server and install the agent.
9. Click **Install** to install the publishing agent and gateway. Click **Done** once it has been successfully installed.

Once a new site is created, you can view and manage its configuration by right-clicking the site in the RAS Console ans choosing **Switch to this Site**.

Managing Sites

Replicating Site Settings to all Sites

Site-specific settings configured for a given site can be replicated to all other sites in a farm. Refer to the table below for the information about which settings can be replicated to other sites.



Category	Section	Options
Farm	VDI Hosts, Persistent Guests	Auto removal timeout
Farm	Settings, Auditing	All Settings
Farm	Settings, Global Logging	Logging Settings
Farm	URL Redirection	All Settings
Load Balancing	Load Balancing	All Settings
Publishing	Advanced, Shortcuts	All Settings
Publishing	Advanced, Extensions	All Settings
Publishing	Advanced, Licensing	All Settings
Publishing	Advanced, Display	All Settings
Publishing	Filtering, User	All Settings
Publishing	Filtering, Client	All Settings
Publishing	Filtering, IP Address	All Settings
Publishing	Filtering, MAC	All Settings
Universal Printing	Universal Printing	Printer Renaming
Universal Printing	Font Management	All Settings
Universal Scanning	Scanning Applications	All Settings
Connection	Authentication	All Settings
Connection	Second Level Authentication	All Settings
Connection	Allowed Devices	All Settings
Reporting	Reporting Engine	Reporting Engine Type
Reporting	Engine specific settings	All Settings

To replicate site settings to all other sites, select **Farm** / **Site** / **Settings** and then select the **Replicate settings** option (at the bottom of the **Auditing** tab page). Please note that this option is disabled if you have just one site in the farm.

Overriding Site Replicated Settings

If an administrator who has permissions to enable or disable replication settings makes a change to a specific setting, such setting is replicated to all other sites.

If an administrator has access to a particular site only, upon modifying site settings which have been replicated, the replicated settings are overridden and the option **Replicate Settings** is automatically cleared, therefore such settings will no longer be replicated to other sites.

Setting a Site as a Licensing Server

If the licensing server fails, or if you would like to set a different site as a Licensing Server, click on the site name in the Farm node and then click Set Site as Licensing Server in the Tasks drop-down menu.

Managing Farm Administrative Accounts

You can have more than one Parallels Remote Application Server administrator who can manage the farm and sites. If needed, you can configure permissions to limit access to specific categories and sites.

If the Parallels Remote Application Server is installed in an Active Directory environment, any user that has elevated privileges and write access to the installation directory can be configured as a Parallels Remote Application Server administrator.

If the Parallels Remote Application Server is installed on a standalone machine, any user that has elevated privileges and write access to the installation directory can be configured as a Parallels Remote Application Server administrator.

Default Parallels Remote Application Server Administrator

The user you specified when you logged into the RAS Console for the first time is automatically granted full permissions and can perform any task in the farm. There should always be at least one enabled administrator with full permissions in the farm.

Adding an Administrator Account

To add an administrator account to the Parallels Remote Application Server:

1. In the RAS Console, select the **Administration** category and then click the **Administration** tab in the right pane.
2. Click the **Tasks** drop-down menu and choose **Add**.
3. The **Administrator Properties** dialog opens.
4. Specify a user name, email address, and the mobile phone number.
5. The Permissions field allows you to configure permissions for this user. By default, the **Full Permissions** option is selected. To grant specific permissions, click the **Change Permissions** button. For further instructions, please read the **Configuring Administrator Accounts Permissions** section (p. 33).
6. In the **Receive system notifications via** drop-down list, select **Email**, so any system notifications are sent to the specified email address. Select **None** to disable email system notifications for this account.

7 Click **OK** to add the new administrator account.

Configuring Administrator Accounts Permissions

Administrator permissions can be configured when creating a new administrator account or from the **Properties** of an existing account. Permissions can be assigned per category (e.g. Farm, Publishing, Universal Printing, etc.) and also per site.

Select the **Full Permissions option** to enable the administrator to modify all categories, sites, and global settings in the farm.

Select one or more options in the **Site permissions** section and then select one or more sties to which these permissions should apply. You can grant the following permissions to an administrator:

- **Allow Site changes**. Can modify the following categories: **Site**, **Load Balancing**, **Universal Printing**, **Universal Scanning**.
- **Allow Publishing changes**. Can modify the **Publishing** category.
- **Allow Connection changes**. Can modify the **Connection** category.
- **Allow viewing of RAS Reporting**. Can view reports generated by the RAS Reporting engine.
- **Allow viewing of Site Information**. Can view (but not modify) the site information.
- **Allow Session Management**. Can manage running sessions.
- **Allow Client Management changes**. Can modify the **Client Manager** category.
- **Allow access to Information**. Can view the read-only **Information** category.

Managing Administrator Accounts

To view and modify administrator's accounts:

1 In the RAS Console, select the **Administration** category and click the **Administration** tab.

2 Right-click an account and choose **Properties** in the context menu.

3 Use the **Administrator Properties** dialog to modify the necessary information. For more info, see **Adding an Administrator Account** (p. 32).

Logging off an Administrator

When an administrator is accessing a category (e.g. Universal Printing), the category is locked for all other administrators. Therefore, upon trying to access a category locked by another administrator, the administrator will be alerted with an error that the object is locked.

If you need to release a lock, you can do the following:

1 On the **Administration** tab page, click the **Tasks** drop-down menu and choose **Show Sessions**.

2 In the **Sessions** dialog, select the administrator who's locking a category and then click **Send Message** to communicate with the administrator or click **Log Off**.

Using Instant Messaging for Administrators

Parallels Remote Application Server administrators that are logged on to the same farm can communicate with each other using a built-in instant messenger.

To communicate with an administrator (or all logged on administrators) using the instant messenger:

1 In the RAS Console, select the **Administration** category.

2 Expand the drop-down menu next to your name (top-right corner of the console screen) and click **Chat...**.

3 The **Parallels Remote Application Server Chat** window opens.

To send a message:

1 Type the message text in the lower input panel.

2 In the **Logged on administrators** list box, select a particular administrator to send the message to or **All** to send the message to all logged on administrators.

3 Click **Send**.

4 Your message history is displayed in the **Messages** panel. To clear the history, click **Clear All**.

5 You can also view the chat history listing all messages between all administrators (not just your own messages). To do so, select the **Administration** node in the console and then select the **Chat History** tab.

Joining Customer Experience Program

Parallels Customer Experience Program helps us to improve the quality and reliability of Parallels Remote Applications Server. If you accept to join the program, we will collect information about the way you use Parallels Remote Application Server. We will not collect any personal data, like your name, address, phone number, or keyboard input.

To jon the program:

1 In the RAS Console, select the **Administration** category.

2 In the right pane, click the **CEP** tab (you may need to scroll the right pane horizontally to see it).

3 Select the **Join Parallels Customer Experience Program** option.

After you join the program, CEP will automatically start to collect information about how you use Parallels Remote Application Server. Data collected from you and other participants is combined and thoroughly analyzed to help us improve Parallels Remote Application Server.

CHAPTER 5

Terminal Servers

To be able to publish applications and desktops for your users through Parallels Remote Application Server, a site must have one or more Terminal Servers. Read this chapter to learn how to add, configure and perform other operations on Terminal Servers.

In This Chapter

Viewing Terminal Servers

To view the list of terminal servers in the farm:

1 In the RAS Console, navigate to **Farm** / <site-name> / **Terminal Servers**.

2 The available terminal servers are displayed on the **Terminal Servers** tab page in the right pane.

You can filter the **Terminal Servers** list as follows:

1 Click the magnifying glass icon, which is located on a toolbar above the list.

2 An extra row is displayed at the top of the list where you can type a string in one or more columns that will be used to filter the list.

3 For example, if you want to search for a server by its name, enter the text in the **Server** column. You can type the entire server name or the first few characters until a match is found. The list will be filtered as you type and only the matching server(s) will be displayed.

4 If you type a filter string in more than one column, they will be combined using the logical AND operator.

5 To remove the filter and display the complete list, click the magnifying glass icon again.

6 If you click the magnifying glass icon one more time, you'll see that the filter that you specified earlier is still there. To remove it completely, simply delete the filter string(s) from the column(s).

Adding a Terminal Server

A Terminal Server serves published resources (applications, desktops, and others) to Parallels RAS users via Remote Desktop Services. A Parallels RAS site must have at least one Terminal Server but may have as many as you require.

Terminal Server Requirements

A Terminal Server must have the Remote Desktop Services (RDS) installed. RDS was known as Terminal Services prior to Windows 2008 R2. On some older versions of Windows Server, Terminal Services are not installed by default. If you'll be using such a server, you can install RDS on it right from the RAS Console, as described later in this section.

> **Note:** In order to access remote resources, each user connecting to Parallels RAS must be a member of the Remote Desktop Users group on the server hosting the resources (i.e. the Terminal Server). Before inviting your users to connect to Parallels RAS, you need to add all your users to the local Remote Desktop Users group on the Terminal Server. For the instructions on how to do it, please consult the Microsoft Windows documentation.

Quickly Adding a Terminal Server

You can quickly add a Terminal Server to a site from the **Start** category in the RAS Console. This process is described in the **Setting Up a Simple RAS Environment** section (p. 21).

The rest of this section describes how to add a Terminal Server from the **Farm** category. This process consists of more steps, but gives you more options.

Searching for Servers

You can search for servers in your Active Directory domain that meet the necessary requirements to be used as terminal servers (see **System Requirements**).

To search for servers:

1. On the **Terminal Servers** tab page, click **Tasks** > **Find**.
2. The **Find Servers** dialog opens and begins searching for suitable servers. If no servers are found, you'll see a message box where you can click **OK** to close the box and the dialog. In such a case, you can add a server manually (jump to the **Adding a Terminal Server Manually** subsection below).
3. If at least one suitable server is found, it will be displayed in the dialog.

4 Select a server that you would like to add as a Terminal Server to the site and verify whether the RAS Terminal Server Agent is installed on it by looking at the **Agent** column. If the agent is not installed, click the **Install Agent** button and follow the instructions. Make sure that you install RDS on the server too (see **Terminal Server Requirements** above).

Adding a Terminal Server Manually

If you couldn't find any servers using the functionality described above, you can add a server manually as follows:

1 Click **Add** in the **Tasks** drop-down menu to launch the **Add Terminal Server** wizard.

2 In the **Server** field, specify the server IP address or FQDN.

3 Select the **Add Firewall Rules** option to automatically configure the firewall on the server.

4 Select the **Install Terminal Services** option if the server doesn't have it installed. See **Terminal Server Requirements** at the beginning of this topic.

5 Select the **Reboot (if required)** option. The server will be restarted if Parallels RAS finds it necessary. Please note that this option is ignored if a reboot is pending on a local machine (i.e. the reboot of a local machine will not be forced).

6 Click **Next**.

7 In the next step, a checking is performed if the RAS Terminal Server Agent is installed on the server.

   If the result is negative (agent is not installed):

   a Click **Install** to push install the agent.

   b In the **Installing Terminal Server Agent** dialog, select the server name on which the agent is to be installed.

   c (Optional) Select the **Override system credentials** option to specify and use different credentials to connect to the server.

   d Click **Install** to install the agent. Click **Done** once the agent is installed. If the push installation of the RAS Terminal Server Agent fails (e.g. SMB share is not available, cannot push agent due to firewall rules, etc.), please refer to the **Installing RAS Terminal Server Agent Manually** section (p. 38), which follows this one.

8 In the **Agent Information** dialog, click **Add** to add the terminal server to the Parallels RAS site.

9 Click **Apply** to commit the new settings.

Installing RAS Terminal Server Agent Manually

You may need to install the RAS Terminal Server Agent manually if the automatic push installation cannot be performed. For instance, an SMB share may be not be available or the firewall rules may interfere with the push installation, etc.

Installing RAS Terminal Server Agent Manually

1. Log into the server where the RAS Terminal Server Agent is to be installed using an administrator account and close all other applications.
2. Copy the Parallels Remote Application Server installation file (`RASInstaller.msi`) to the server and double-click it to launch the installation.
3. Once prompted, click **Next** and accept the End-User license agreement.
4. Specify the path where the RAS Terminal Server Agent should be installed and click **Next**.
5. Select **Custom** and click **Next**.
6. Click on **RAS Terminal Server Agent** and select **Entire Feature will be installed on local hard drive** from the drop-down menu.
7. Ensure that all other components are deselected and click **Next**.
8. Click **Install** to start the installation.
9. Click **Finish** once the installation is finished.

The RAS Terminal Server Agent doesn't require any configuration. Once the agent is installed, highlight the server name in the Parallels Remote Application Server Console and click **Check Agent** in the **Tasks** drop-down menu to update the server status.

Uninstalling RAS Terminal Server Agent

To uninstall RAS Terminal Server Agent from a server:

1. Navigate to **Start** > **Control Panel** > **Programs** > **Uninstall a Program**.
2. Find **Parallels Remote Application Server** in the list of installed programs.
3. If you don't have any other Parallels RAS components on the server that you want to keep, right-click **Parallels Remote Application Server** and then click **Uninstall**. Follow the instructions to uninstall the program. You may skip the steps below.
4. If you have other RAS components that you want to keep on the server, right-click **Parallels Remote Application Server** and then click **Change**.
5. Click **Next** on the Welcome page.
6. On the **Change, repair, or remove** page, select **Change**.
7. On the next page, select **Custom**.
8. Select **RAS Terminal Server Agent**, then click the drop-down menu in front of it, and click **Entire feature will be unavailable**.
9. Click **Next** and complete the wizard.

Configuring a Terminal Server

After you add a Terminal Server to a site, you can begin using it to host published resources right away. In this section, we'll talk about how you can configure and manage an existing Terminal Server.

Read on to learn how to:

- Check RAS Terminal Server Agent Status (p. 40)
- Change a Terminal Server Site Assignment (p. 41)
- View and Modify Terminal Server Properties (p. 41)

Check RAS Terminal Server Agent Status

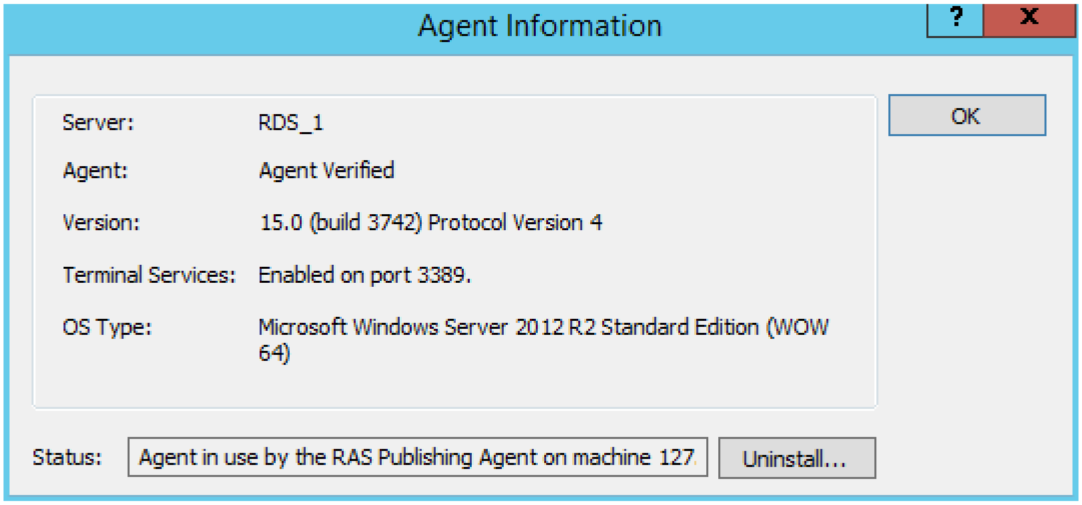
A terminal server must have a RAS Terminal Server Agent installed to provide the intended functionality. In addition to this, Remote Desktop Services (formerly Terminal Services) must be installed in Windows on the server.

Normally, when you add a terminal server to a site in the RAS Console, the Terminal Server Agent and the Remote Desktop Services are installed by default. However, if you skipped the installation (or if you or someone uninstalled the agent or RDS from the server later), you can check their status and take appropriate actions.

To check the RAS Terminal Server Agent and RDS status and install them if necessary:

1. First, you can look at the **Agent State** column in the **Terminal Services** list. If there's a problem with the Terminal Server Agent or RDS, the column will display an appropriate error message.

2 Right-click a server and then click **Check Agent** in the context menu. The **Agent Information** dialog opens.



Server: RDS_1

Agent: Agent Verified

Version: 15.0 (build 3742) Protocol Version 4

Terminal Services: Enabled on port 3389.

OS Type: Microsoft Windows Server 2012 R2 Standard Edition (WOW 64)

Status: Agent in use by the RAS Publishing Agent on machine 127

3 If the agent and/or Terminal Services (RDS) are not installed on the server, you need to install them. To do so, click **Install** and follow the instructions.

4 After the installation is complete, you may need to reboot the terminal server on which the installation was performed.

Change Terminal Server Site Assignment

You can assign a terminal server to a different site in your farm if you need to do so. Please note that this functionality is only available if you have more than one site in your farm.

To change the site assignment:

1 Right-click a terminal server and then click **Change Site** in the context menu. The **Change Site** dialog opens.

2 Select a site in the list and click **OK**. The server will be moved to the **Terminal Servers** list of the target site (**Farm** / <new-site-name> / **Terminal Servers**).

View and Modify Terminal Server Properties

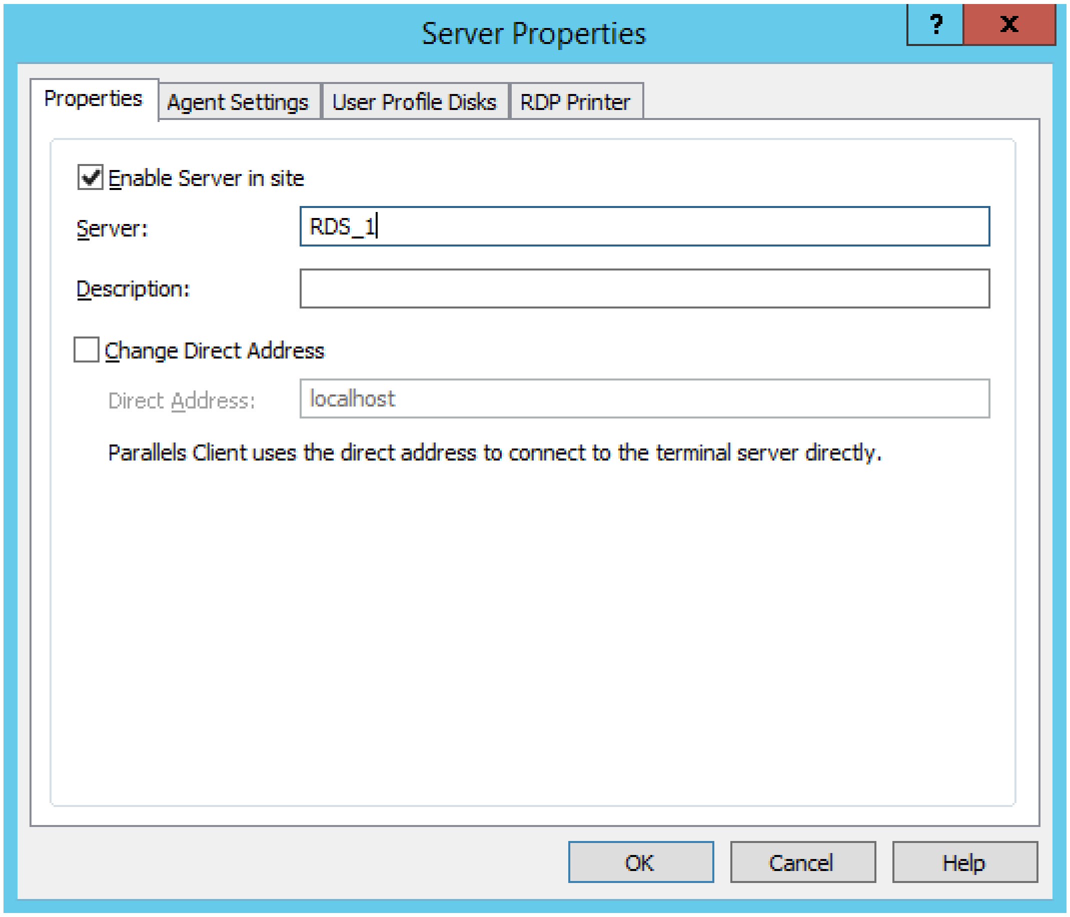
To configure a Terminal Server:

1 In the RAS Console, navigate to **Farm** / **Site** / **Terminal Servers**.

2 Right-click a server and click **Properties** in the context menu.

3 The **Server Properties** dialog opens where you can configure the terminal server.

The rest of this section describes how to set individual server configuration properties.



☑ Enable Server in site

Server: RDS_1

Description:

□ Change Direct Address

Direct Address: localhost

Parallels Client uses the direct address to connect to the terminal server directly.

General

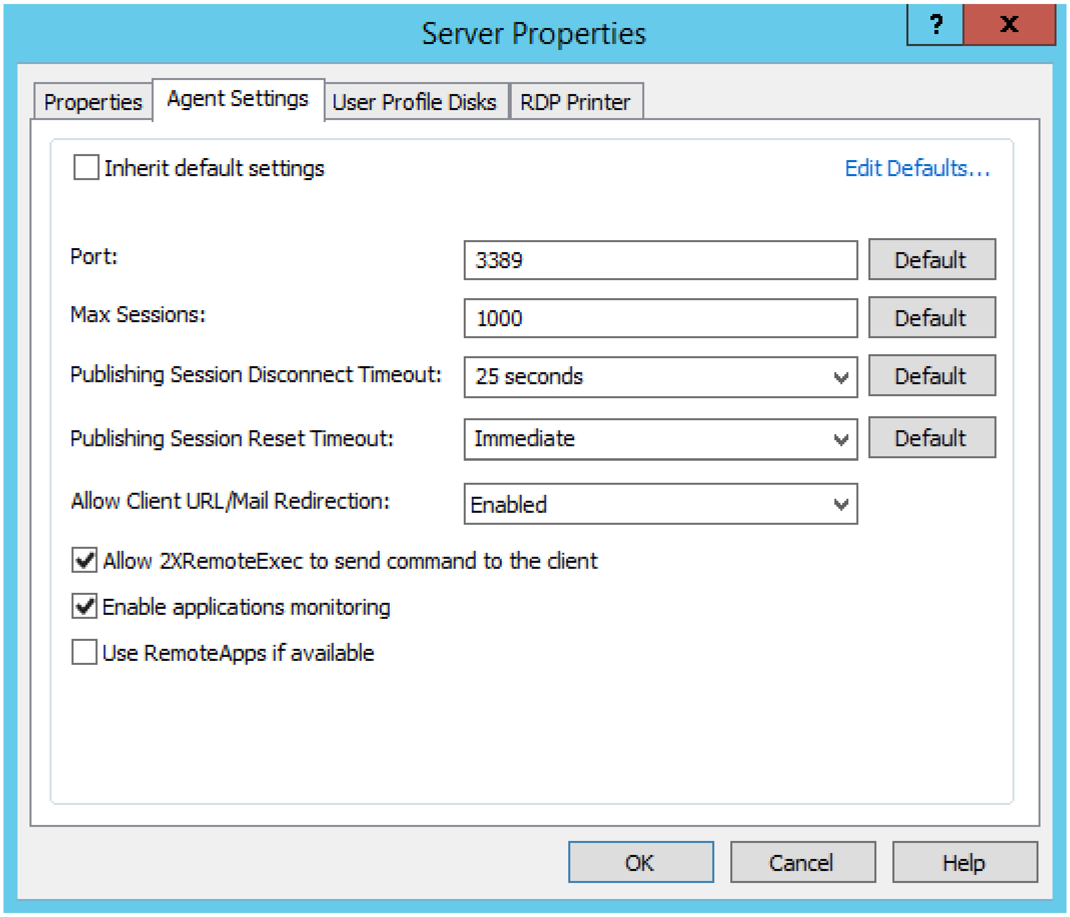
Select or clear the **Enable Server in site** option to enable or disable a server in the site. By default, a server is enabled. A disabled server cannot serve published applications and virtual desktops to clients.

Other elements on this page are:

- **Server:** Specifies the server name.
- **Description:** Specifies the server description.
- **Change Direct Address:** Select this option if you need to change the direct address that Parallels Client uses to establish a direct connection with the terminal server.

Agent

Each terminal server in the farm has a RAS Terminal Server Agent installed to provide a connection between the Parallels Remote Application Server and the terminal server. Use the **Agent** tab page to configure the agent.



□ Inherit default settings

Port: 3389

Max Sessions: 1000

Publishing Session Disconnect Timeout: 25 seconds

Publishing Session Reset Timeout: Immediate

Allow Client URL/Mail Redirection: Enabled

☑ Allow 2XRemoteExec to send command to the client

☑ Enable applications monitoring

□ Use RemoteApps if available

To use default settings, select the **Inherit default settings** option. To view or modify the default settings, click the **Edit Defaults** link.

If you want to specify custom settings for a given server, clear the **Inherit default settings** option and specify agent properties as follows:

- **Port**. Specifies a different remote desktop connection port number if a non-default port is configured on the server.
- **Max Sessions**. Specifies the maximum number of sessions.
- **Publishing Session Disconnect Timeout**. Specifies the amount of time each session remains connected in the background after the user has closed the published application. This option is used to avoid unnecessary reconnections with the server.

- **Publishing Session Reset Timeout**. This feature allows you to control how long it takes for a session to be logged off after it is marked as "disconnected".
- **Allow Client URL/Mail Redirection**. Select this option to allow http and mailto links to be opened using a local application on the client computer rather than the server's resources. To configure a list of URLs which should not be redirected, navigate to the **URL Redirection** tab in the **Settings** node of a site.
- **Allow 2XRemoteExec to send command to the client**. Select this option to allow a process running on the server to instruct the client to deploy an application on the client side. More about 2XRemoteExec in the **Using RemoteExec** subsection below.
- **Enable applications monitoring**. Enable or disable monitoring of applications on the server. Disabling application monitoring stops the WMI monitoring to reduce CPU usage on the server and network usage while transferring the information to RAS Publishing Agent. If the option is enabled, the collected information will appear in a corresponding RAS report. If the option is disabled, the information from this server will be absent from a report.
- **Use RemoteApps if available**. Enable this option to allow use of remote apps for shell-related issues when an app is not displayed correctly. This feature is supported on the Parallels Client for Windows only.

Using 2XRemoteExec

2XRemoteExec is a feature that facilitates the servers ability to send commands to the client. This is done using the command line utility `2XRemoteExec.exe`. Command line options include:

Command Line Parameter	Parameter Description
`-s`	Used to run the 2XRemoteExec command in 'silent' mode. Without this parameter, the command will display pop up messages from the application. If you include the parameter, the messages will not be displayed.
`-t`	Is used to specify the timeout until the application is started. Timeout must be a value between 5000ms and 30000ms. Note that the value inserted is in 'ms'. If the timeout expires the command returns with an error. Please note that the application might still be started on the client.
`-?`	Shows a help list of the parameters that 2XRemoteExec uses.
`"Path for Remote Application"`	The Application that will be started on the client as prompted from the server.

2XRemoteExec examples:

The following command displays a message box describing the parameters that can be used.

```
2XRemoteExec -?
```

This command runs Notepad on the client.

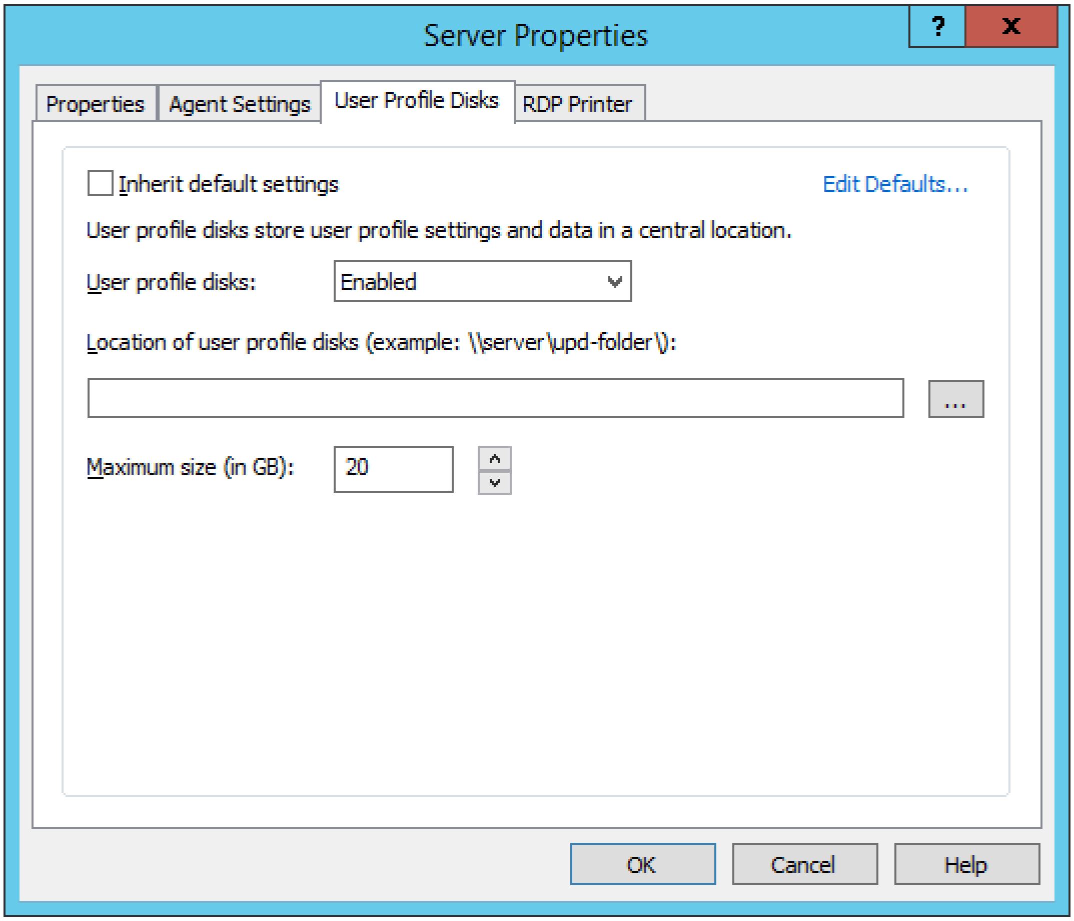
```
2XRemoteExec C:\Windows\System32\Notepad.exe
```

In this example, the command opens the `C:\readme.txt` file in the Notepad on the client. No message is shown and 2XRemoteExec would wait for 6 seconds or until the application is started.

```
2XRemoteExec C:\Windows\System32\Notepad.exe “C:\readme.txt”
```

User Profile Disks

User profile disks store user and application data on a single virtual disk that is dedicated to one user's profile. Virtual disks are reattached at logon and are completely transparent to the user, so the user can save their data or change and save their app settings on what appears to be a local disk. All personal data and settings persist when connecting to different computers in a virtual desktop collection or session collection.



□ Inherit default settings

User profile disks store user profile settings and data in a central location.

User profile disks: Enabled

Location of user profile disks (example: \\server\upd-folder\):

Maximum size (in GB): 20

To use default user profile disks settings, select the **Inherit default settings** option. To view or modify the default settings, click the **Edit Defaults** link.

To use specific settings:

1 Clear the **Inherit default settings** option.

2 In the **User profile disks** drop down list, select one of the following:

- **Do not change.** Keep the current server settings. This is the default setting.
- **Enabled**. Enable user profile disks.
- **Disabled**. Disable user profile disks.

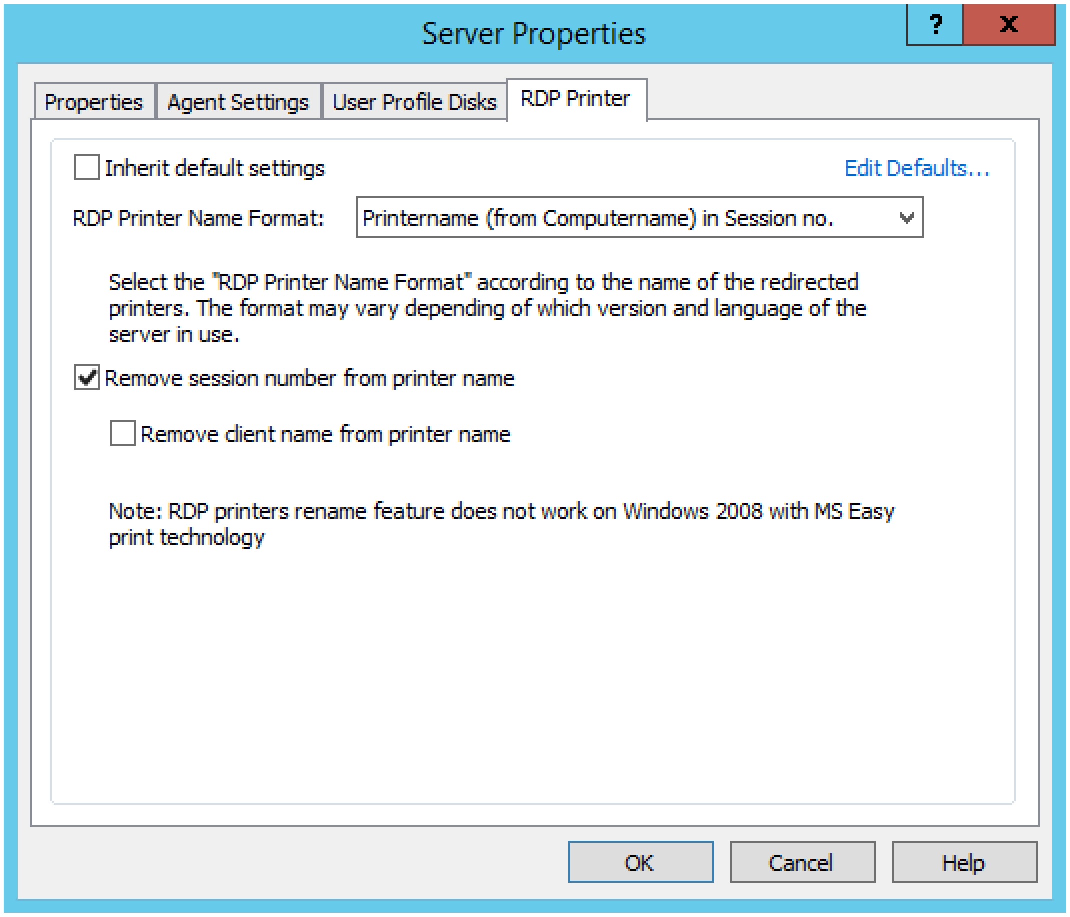
3 Specify a network location where the disks should be created using the Microsoft Windows UNC format (e.g. \\RAS\users\disks).

4 Specify the maximum allowed disk size (in gigabytes) in the **Maximum size** field.

Please note that the server must have full control permissions on the user profile disk share.

RDP Printer

The **RDP Printer** tab page allows you to configure the renaming format of redirected printers. The format may vary depending on which version and language of the server you are using.



□ Inherit default settings

RDP Printer Name Format: Printername (from Computername) in Session no.

Select the "RDP Printer Name Format" according to the name of the redirected printers. The format may vary depending of which version and language of the server in use.

☑ Remove session number from printer name

□ Remove client name from printer name

Note: RDP printers rename feature does not work on Windows 2008 with MS Easy print technology

To use the default RDP printer settings, select the **Inherit default settings** option. To view or modify the default options, click the **Edit Defaults** link.

The **RDP Printer Name Format** drop-down list allows you to select a printer name format specifically for the configured server.

Select the **Remove session number from printer name** and/or the **Remove client name from printer name** to exclude the corresponding information from the printer name.

Grouping Terminal Servers

Terminal Server groups can be used to specify from which group of servers a published resource should be published in the wizard. It is highly recommended to use groups in a multi-server environment to ease the management of publishing items.

To create or modify a terminal server group:

1. With **Farm** > **Terminal Servers** selected in the navigation tree, click the **Groups** tab.
2. To create a new group, click **Add** from the **Tasks** drop down menu (or click the **+** icon). To modify an existing group, right-click it and then click **Properties** in the context menu.
3. In the **Group Properties** dialog, specify the group name and select the servers to add to the group.

Using a Terminal Server Scheduler

The **Scheduler** tab page in the **Terminal Servers** view allows you to reboot or temporarily disable servers according to a schedule.

To create a new scheduler task or modify an existing one:

1. In the RAS Console, navigate to **Farm** / <server-name> / **Terminal Servers.**
2. In the right pane, click the **Scheduler** tab.
3. To create a new task, click **Add** in the **Tasks** drop-down menu and select a desired task from the following options:
   - **Disable Server**
   - **Disable Server Group**
   - **Reboot Server**
   - **Reboot Server Group**

   To modify an existing task, right-click it and select **Properties** in the context menu. To delete a task, right-click it and select **Delete**.
4. The schedule properties dialog will have slightly different options depending on the task type that you choose in the **Tasks** > **Add** drop-down menu. The differences are described in the following steps.
5. Select **Enable Schedule** to enable the task.
6. Specify the task name, target server (or server group if you've selected a group task), and an optional description.
7. Specify the start date and time, duration, and the scope (the **Repeat** property). If you select **Never** in the **Repeat** drop-down box, the task will run only once.

8 The **Notify Users Message** box allows you to type a message that will be sent to the users before the task is executed (you can select the time period using the **Send message** [ ] **before action is triggered** drop-down list).

9 The **Options** section will have different options depending on the task type:

- If a task is **Disable Server** or **Disable Server Group**, the available option is **On Disable**. You can use it to specify how the active session states should be handled.
- If a task is **Reboot Server** or **Reboot Server Group**, the available options are **Enable Drain Mode** and **Force Server Reboot After** (the options work together). If you enable the drain mode, the following will happen. When the task triggers, new connections to a server will be refused but active connections will continue to run. A server will be rebooted when all active users end their sessions or when it's time to force reboot it, whichever comes first. For active users not to lose their work, specify a message in the **Notify Users Message** box advising them to save their work and log off. Please also see the **Terminal Server Drain Mode Examples** subsection below.

10 Click **OK** to save the changes and close the dialog.

Terminal Server Drain Mode Examples

Example 1: Scheduling a server group for reboot without the drain mode

A server group contains 3 servers: A, B, C

- Date: 7/24/2015
- Start Time: 10:45am
- Send Message: 2 minutes before

Users with active sessions are notified 2 minutes before the server rebooting task is triggered.

Example 2: Scheduling a server group for reboot with the drain mode enabled

A server group containing 3 servers: A, B, C

- Date: 7/24/2015
- Start Time: 10:45am
- Drain mode: enabled
- Force reboot after: 3 hours
- Send Message: 2 minutes before

The session users are notified 2 minutes before the server rebooting task is triggered.

When the task is triggered:

1 The drain mode is enabled on the servers.

2 Server A and B have no active or disconnected sessions, so they are restarted immediately.

3 Server C still has open/disconnected sessions, so it continues to run until all users end their sessions. If the server still has active sessions in three hours, the sessions are terminated and the server is restarted.

Note: Computer Configuration / Administrative Templates / Windows Components / Remote Desktop Services / Remote Desktop Session Host / Connection / Allow users to connect remotely using remote desktop services must be set to **Not configured,** otherwise it takes precedence.

Managing Logons

The logon management feature allows you to enable or disable logons from Terminal Servers. The feature performs the same tasks as the `change logon` command-line utility.

To manage logons:

1. In the Parallels Remote Application Server Console, navigate to **Farm** / **Site** / **Terminal Servers**.
2. Select a terminal server and click **Tasks** > **Control**.
3. The **Control** menu item has the following submenu items:
   - **Enable logons** — enables logons. This option performs the same action as the `change logon /enable` command.
   - **Disable logons and reconnections** — disables subsequent logons. Does not affect currently logged on users. This option performs the same action as `change logon /disable` command.
   - **Disable logons until server reboot** — disables logons until the computer is restarted, but allows reconnections to existing sessions. Same action as the `change logon /drainuntilrestart` command.

To see the current logon control mode for a terminal server, right-click it and point to **Control** in the context menu. The checked-out option indicates the current logon control mode of the selected terminal server. To do this check from the command line, execute the `change logon /QUERY` command on the server.

Please also note the following:

- When applying a logon control mode on a server, ensure that the agent state is updated accordingly.
- You must set the logon control options for the servers one-by-one. If you need to do it for a group of servers, you can use the scheduler (see **Using a Terminal Server Scheduler** (p. 47)).
- There's no option for disabling logons from new client sessions but allowing reconnections to existing sessions (`change logon /DRAIN`) because its behavior is identical to the **Disable logons until server restart option** (`change logon /DRAINUNTILRESTART`).

- **Computer Configuration / Administrative Templates / Windows Components / Remote Desktop Services / Remote Desktop Session Host / Connection / Allow users to connect remotely using remote desktop services** must be set to **Not configured,** otherwise it takes precedence.

Publishing from a Terminal Server

This section describes how to publish resources hosted by a Terminal Server. The publishing functionality described here is accessed from the **Publishing** category in the RAS Console.

You can also publish resources using a publishing wizard in the **Start** category, as described in the **Setting Up a Simple RAS Environment** section (p. 21). The **Start** category publishing wizard is a simplified version that gives you convenient options of selecting the resources that you want to publish. You may try both approaches and choose the one that better suits your needs.

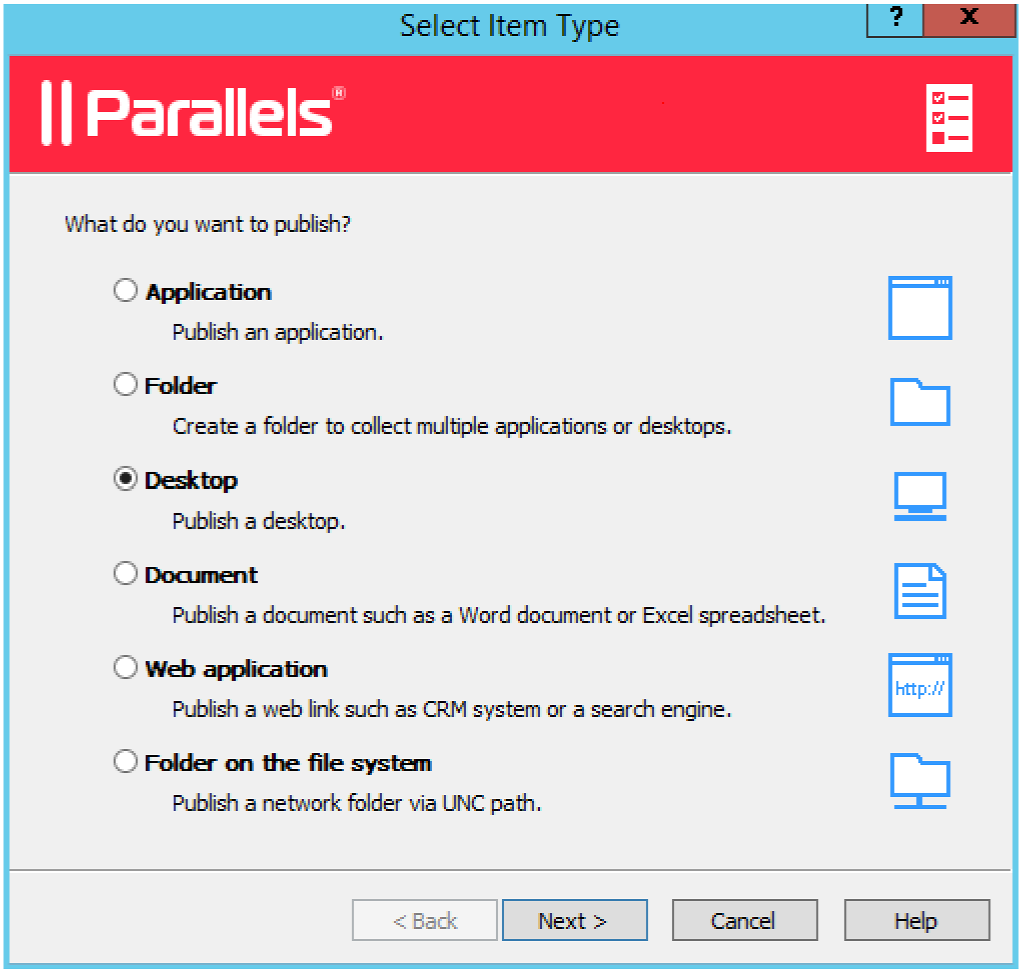
Read on to learn how to publish resources from a Terminal Server.

Publishing a Desktop from a Terminal Server

To publish a desktop from a terminal server:

1. In the RAS Console, select the **Publishing** category and click the **Add** icon below the **Published Resources** tree. This will launch the publishing wizard.

2 In the first step of the wizard, select **Desktop** and click **Next**.



What do you want to publish?

○ **Application**
Publish an application.

○ **Folder**
Create a folder to collect multiple applications or desktops.

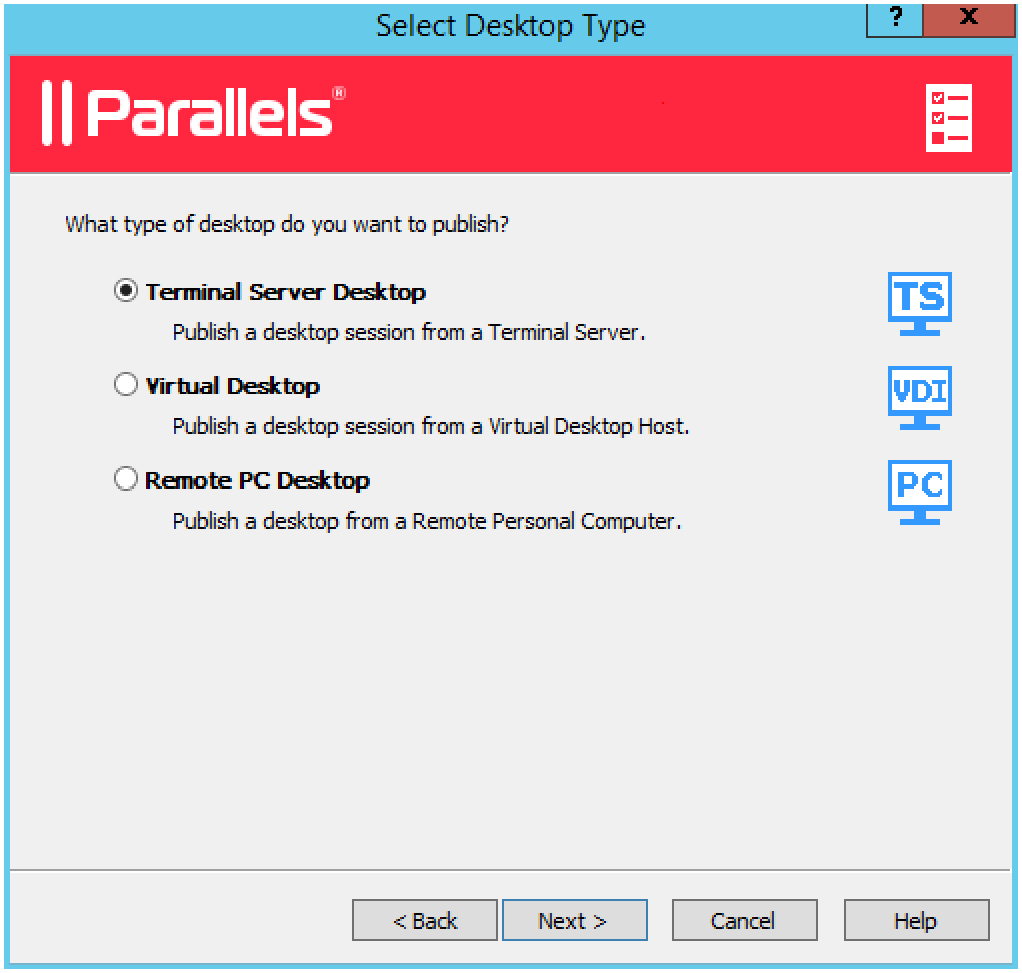
● **Desktop**
Publish a desktop.

○ **Document**
Publish a document such as a Word document or Excel spreadsheet.

○ **Web application**
Publish a web link such as CRM system or a search engine.

○ **Folder on the file system**
Publish a network folder via UNC path.

3 In the **Select Desktop Type** step, select **Terminal Server Desktop** and click **Next.**



What type of desktop do you want to publish?

● **Terminal Server Desktop**
Publish a desktop session from a Terminal Server.

○ **Virtual Desktop**
Publish a desktop session from a Virtual Desktop Host.

○ **Remote PC Desktop**
Publish a desktop from a Remote Personal Computer.

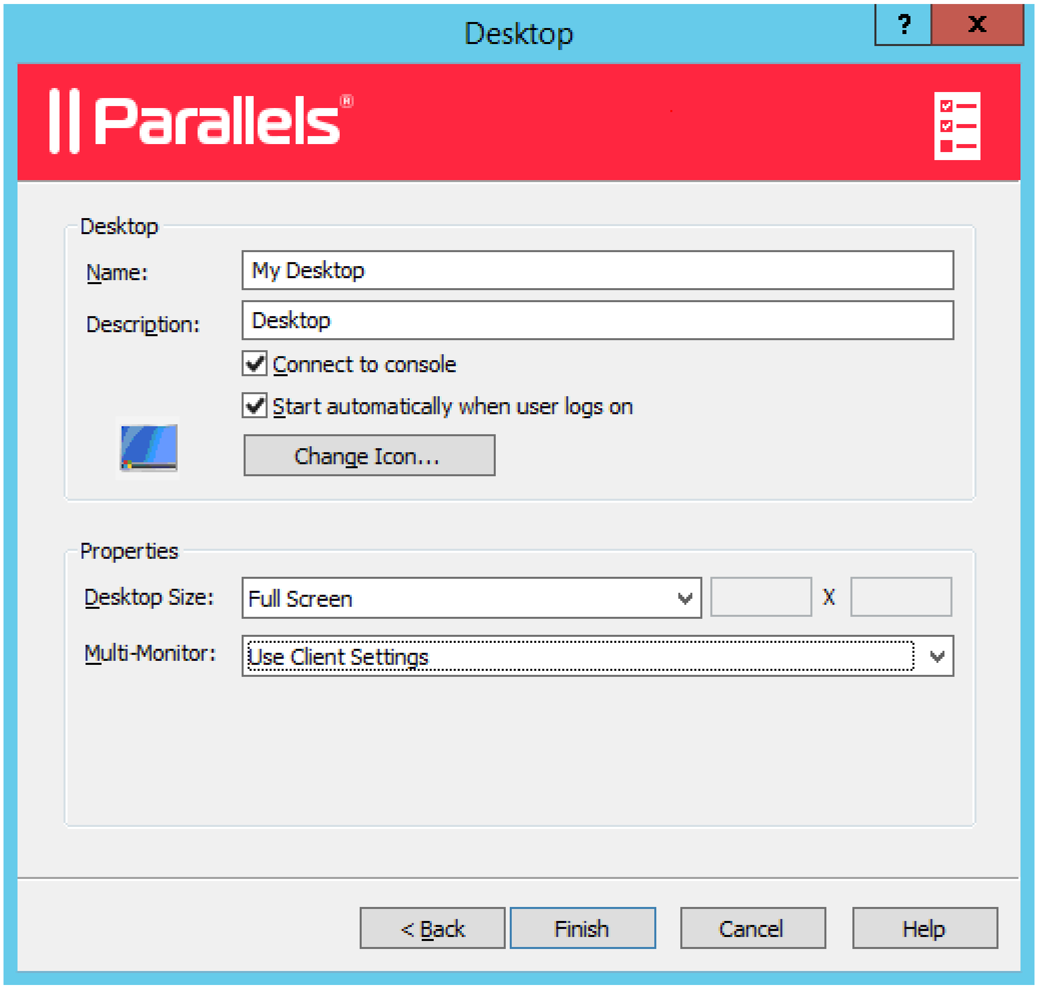
4 Select the Terminal Server(s) which desktops you want to publish. You can select all servers on the site, server group(s), or individual servers. Please note that if you have just one terminal server, this step will be skipped.

5 Click **Next**.

6 In the next step:

- Specify a name and description for the shared desktop, and, optionally, change the icon.
- Select the **Connect to console** option, so that the users will be connecting to console rather than a virtual session.
- Select the **Start automatically when user logs on** option if you want to open a desktop as soon as a user logs on.
- Specify the desired screen resolution using the **Desktop Size** drop-down list. To set a custom width and height of the screen, select **Custom** in the **Size** drop-down list and specify the desired values in the fields provided.

- In the **Multi-Monitor** drop-down, select whether the multi-monitor support should be enabled, disabled, or whether the client settings should be used.



Desktop

Name: My Desktop

Description: Desktop

☑ Connect to console

☑ Start automatically when user logs on

Properties

Desktop Size: Full Screen

Multi-Monitor: Use Client Settings

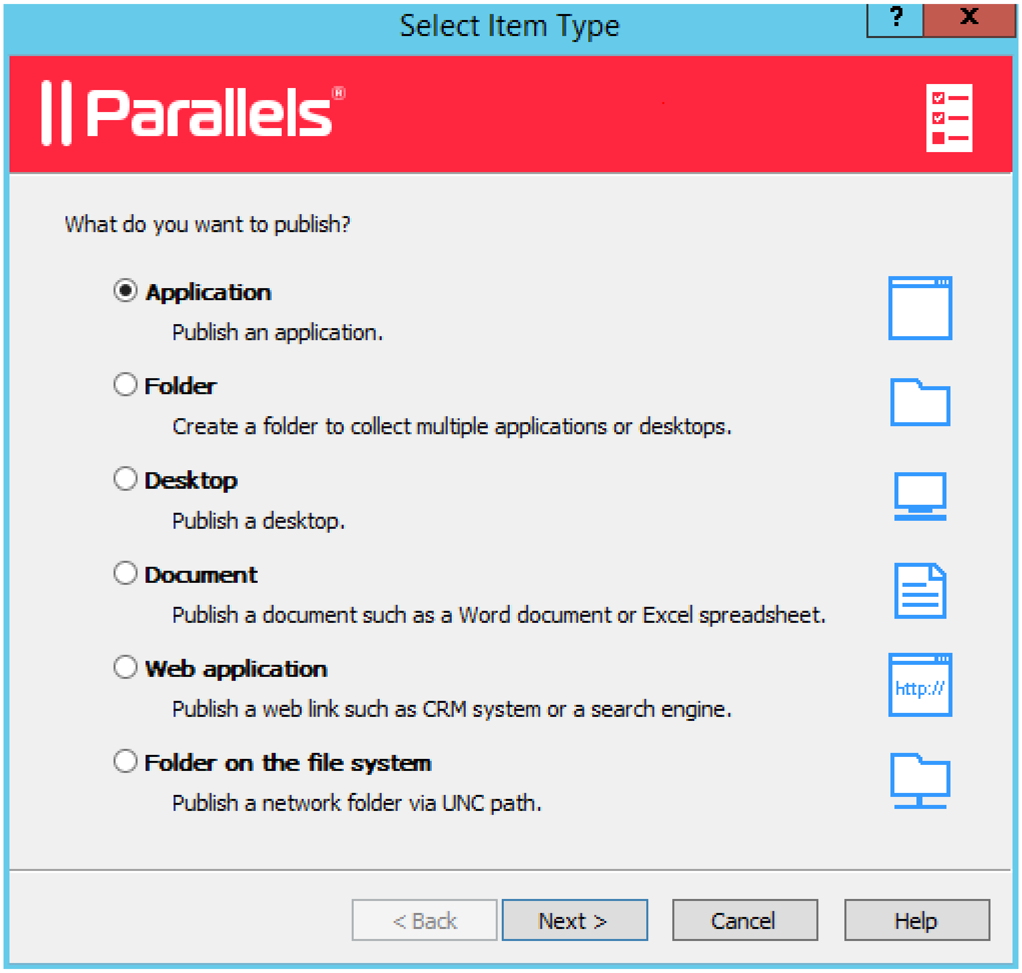
7 When done, click **Finish** to publish the desktop.

Publishing an Application from a Terminal Server

To publish an application from a terminal server follow the below procedure:

1 In the RAS Console, select the **Publishing** category and then click the **Add** icon below the **Published Resources** tree (or right-click inside the **Published Resources** box and click **Add** in the context menu). This will launch the publishing wizard.

2 On the **Select Item Type** wizard page, select **Application** and click **Next.**



What do you want to publish?

● **Application**
Publish an application.

○ **Folder**
Create a folder to collect multiple applications or desktops.

○ **Desktop**
Publish a desktop.

○ **Document**
Publish a document such as a Word document or Excel spreadsheet.

○ **Web application**
Publish a web link such as CRM system or a search engine.

○ **Folder on the file system**
Publish a network folder via UNC path.

3 On the **Select Server Type** page, select **Terminal Server** and click **Next.**

4 One the **Select Application Type** page, select one of the following available options:

- **Single Application**. Choose this option to fully configure the application settings yourself such as the executable path etc.
- **Installed Application**. Choose this option to publish an application that is already installed on the server, therefore all of the application settings are automatically configured.
- **Predefined Application**. Choose this option to publish a commonly used Windows application such as Windows Explorer.

5 Click **Next**.

6 On the **Publish From** page, specify from which terminal servers the application should be published. You have the following options:

- **All Servers in Site**. If selected, the application will be published from all servers that are available on the site.

- **Server Groups**. Select this option and then select individual server groups to publish the application from.
- **Individual Servers**. Select this option and select individual servers to publish the application from.

Please note that the **Publish From** wizard page will appear only if you have multiple terminal servers. If you have just one server, this page will be skipped by the wizard. The page will also be skipped if the application type that you are installing is **Predefined Application**.

7 Click **Next**.

8 Depending on the application type that you selected on the **Select Application Type** page, the next wizard page will be one of the following:

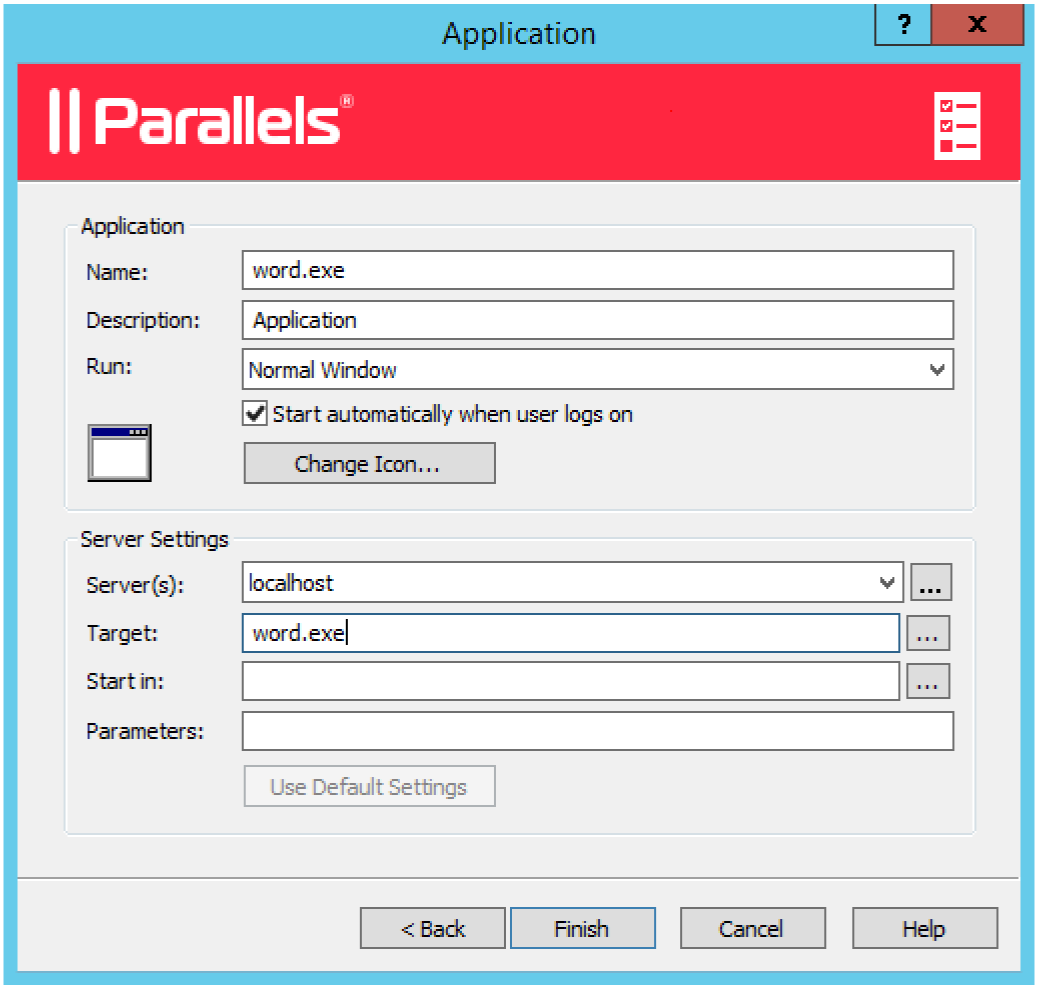
- If you selected **Single Application**, the **Application** page will open where you have to specify the application settings manually (more about this option later in this section).
- If you selected **Installed Applications**, the **Installed Applications** page will open listing available applications (the applications are grouped by functionality). Select an application you wish to install and click **Next**. Follows the instructions to complete the wizard.
- If you selected **Predefined Application,** the **Select Predefined Applications** page will open listing available applications. Select an application you wish to publish and click **Finish**.

9 If you selected **Single Application** on the **Select Application Type** wizard page, the **Application** page will open at this point. Specify the application settings as follows (see the screenshot below):

Note that if you populate the **Target** field first using the "browse" button (**[...]**), the application **Name**, **Description**, and icon will be chosen automatically. You can override this selection if you wish.

- **Name**. Choose and type a name for the application.
- **Description**. Type an optional description.
- **Run**. Select the application window state (normal window, minimized, maximized).
- **Start automatically when user logs on.** Select this option if you want to start an application as soon as a user logs on. This option works on desktop versions of Parallels Client only.
- **Change Icon**. Change the application icon (optional).
- **Server(s)**. Allows you to specify the rest of the server parameters individually for each server the application was published from. Select a server from the drop-down list box and specify the parameters. Repeat for other servers in the list.
- **Target**. Specify the application executable path and file name.
- **Start in**. If the **Target** field is valid, this field will be populated automatically. You can specify your own path if needed.

- **Parameters**. If the application accepts startup parameters, you can specify them in this field.



10 When done, click **Finish** to publish the application.

Publishing a Web Application from a Terminal Server

A web application is like any other application that you can publish using the standard application publishing functionality. However, to simplify publishing of straight URL links to web applications, a separate publishing item type is available that allows you to accomplish this task with minimal number of steps.

To publish a web application:

1 In the RAS Console, select the **Publishing** category and then click the **Add** icon below the **Published Resources** tree (or right-click inside the **Published Resources** box and click **Add** in the context menu). This will launch the publishing wizard.

2 On the **Select Item Type** wizard page, select **Web Application** and click **Next.**

3 On the **Select Server Type** page, select **Terminal Server** and click **Next**.

4 On the **Publish From** page, select the server(s) to publish from. Note that if you have just one terminal server, the **Publish From** page will not appear.

5 On the **Web Application** wizard page that opens, specify the web application name, description, window state, and the URL. Select the **Force to use Internet Explorer** option if needed. To browse for a specific application icon, click **Change Icon**.

6 When done, click **Finish** to publish the application.

When published, the web application will appear in the **Publishing** > **Published Resources list**, just like any other application.

Publishing a Network Folder from a Terminal Server

You can publish a filesystem folder via UNC path to open in Windows explorer. To minimize the number of configuration steps, a special publishing item is available that allows you to publish a network folder from a terminal server.

To publish a network folder:

1 In the RAS Console, select the **Publishing** category and then click the **Add** icon below the **Published Resources** tree (or right-click inside the **Published Resources** box and click **Add** in the context menu). This will launch the publishing wizard.

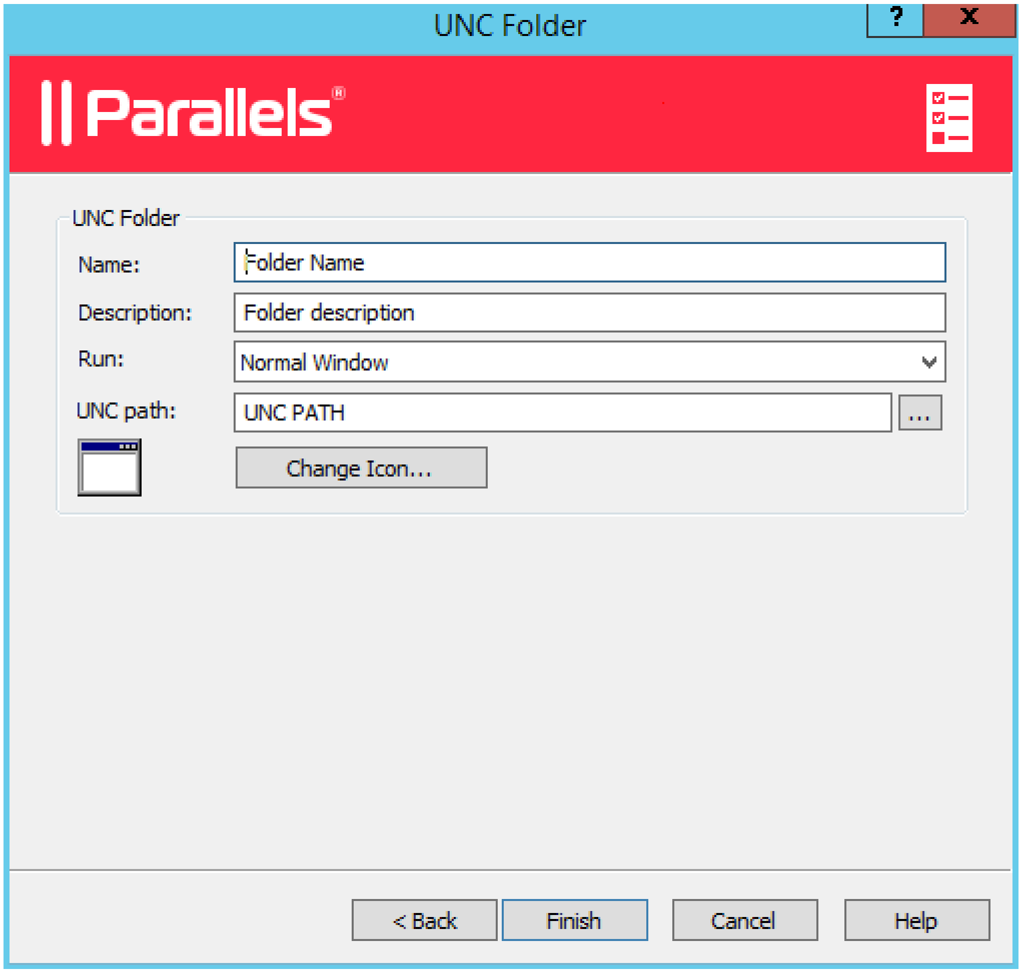
2 On the **Select Item Type** wizard page, select **Folder on the file system** and click **Next.**

3 On the **Select Server Type** page, select **Terminal Server** and click **Next**.

4 On the **Publish From** page, select the server(s) to publish from. Note that if you have just one terminal server, the **Publish From** page will not appear.

5 On the **UNC Folder** wizard page, specify the usual application properties.

6 In the **UNC path** field, enter the UNC path of the folder you wish to publish. Click the **[...]** button to browse for a folder (it may take some time for the **Browse for Folder** dialog to open).



UNC Folder

UNC Folder

Name: Folder Name

Description: Folder description

Run: Normal Window

UNC path: UNC PATH

7 Click **Finish** to publish the folder and close the wizard.

When published, the network folder will appear in the **Publishing** > **Published Resources list**, just like any other application. If you select it and then click the **Application** tab, the application settings will be as follows:

- The **Target** property will always be set to `PublishedExplorer.exe`. This binary is created automatically (via agents pushing) and is simply a copy of the standard `explorer.exe` executable.
- The **Parameters** property specifies the network folder that we want to publish. The folder path can be in any format that the `explorer.exe` can handle.

Please note that although you have all standard application property tabs enabled for this publishing item, at least the following items should be ignored, as they are completely irrelevant:

- **Publish From**
- **File Extensions**

Publishing a Document from a Terminal Server

To publish a document from a terminal server, follow the below procedure:

1. In the RAS Console, select the **Publishing** category and then click the **Add** icon below the **Published Resources** tree (or right-click inside the **Published Resources** box and click **Add** in the context menu). This will launch the publishing wizard.
2. On the **Select Item Type** wizard page, select **Document** and click **Next.**
3. Select **Terminal Server** and click **Next**.
4. Specify the content type of the document you want to publish. You can select the content type from the predefined list or specify a custom content type in the **Custom content types** input field.
5. Click **Next** when ready.
6. On the **Publish From** page, specify from which terminal servers the application should be published. You have the following options:

   - **All Servers in Site**. If selected, the application will be published from all servers that are available on the site.
   - **Server Groups**. Select this option and then select individual server groups to publish the application from.
   - **Individual Servers**. Select this option and select individual servers to publish the application from.

   Please note that the **Publish From** wizard page will appear only if you have multiple terminal servers. If you have just one server, this page will be skipped by the wizard.
7. On the **Application** page, enter a name, an optional description, a Window state, and an icon if needed.
8. Use the **[...]** button next to the **Target** input field to browse for the document. All other fields will be automatically populated. To edit any of the auto populated fields, highlight them and enter the required details.
9. (Optional) In the **Parameters** input field, specify the parameters to pass to the application when it starts.

   Note: Use the **Server(s)** drop down list to specify different document settings for a specific server in case the document is configured differently on that particular server. The settings will be saved for each server you select individually.
10. Click **Finish** to publish the document.

CHAPTER 6

VDI Hosts

A VDI host is a computer on which a hypervisor is running one or more virtual machines (also known as guest virtual machines or guest VMs). Each VM runs an operating system called the guest operating system (or guest OS). Please note that Parallels Remote Application Server supports Windows as a guest OS only.

By adding a VDI host to a site, you can manage VMs running on it, create new VMs from a template, and publish desktops and applications from their respective guest operating systems.

This chapter explains how to add, configure, and use VDI hosts and guest VMs to serve published resources to your users.

In This Chapter

Adding a VDI Host

Before adding a server as a VDI host to a site, you need to install one of the supported hypervisors on it. Parallels Remote Application Server supports VDI hosts based on the following virtualization technologies:

- VMware ESXi
- VMware VCenter
- Microsoft Hyper-V
- Microsoft Hyper-V Failover Cluster
- Citrix XenServer

The **VDI Agent Technology** section (p. 79) provides information on how to install different hypervisors. The rest of this section assumes that a hypervisor is already installed on a server.

Searching for VDI Hosts

To search for available VDI hosts on your network:

1. In the RAS console, navigate to the **Farm** / **Site** / **VDI Hosts** node, where <site_name> is the site to which you would like to add a VDI host.
2. On the **Virtual Desktop Hosts** tab page, click **Tasks** > **Find**.
3. The **Find Virtual Desktop Hosts** dialog opens and begins to search for VDI hosts. If no VDI hosts are found, you can add a host manually (jump to the **Manually Adding a VDI Host** subsection below).
4. If at least one suitable VDI host is found, it will be displayed in the dialog. You can select the **Show all hosts** option to display all available hosts, including the hosts that don't meet the minimum system requirements. To refresh the list, click **Refresh**.
5. Verify that the host of interest has RAS VDI Agent installed by looking at the **Agent** column. If the agent is not installed, click the **Install Agent** button and follow the instructions.
6. Click **OK** to add the VDI host to the site.

Manually Adding a VDI Host

To add a VDI host manually:

1. In the **Tasks** drop-down menu, click **Add** to launch the **Add VDI Server** wizard.
2. Select the hypervisor type that your VDI host is running and specify the host's IP address or FQDN.
3. Select the **Add Firewall Rules** option to automatically configure the firewall on the server.
4. The VDI Agent-specific options behave differently for different hypervisor types. The **VDI Agent Technology** section (p. 79) provides the complete details.
5. Click **Next**.
6. In this step, Parallels Remote Application Server checks if the RAS VDI Agent is installed on the VDI host. If the agent is not installed, do the following:
   a. Click **Install** to push install the agent on the VDI host.
   b. In the **Installing RAS VDI Host Agent** dialog, highlight the server name on which the RAS Agent is to be installed.
   c. (Optional) Select the **Override system credentials** option to specify and use different credentials to log into to the target server.
   d. Click **Install** to install the agent.
   e. Click **Done** once the agent is installed. If the automatic installation of the RAS VDI Agent fails, refer to the **Installing RAS VDI Agent Manually** section (p. 62).
7. Click **Add** to add the VDI host to the Parallels Remote Application Server farm.

Checking the RAS VDI Agent Status

The RAS VDI Agent must be installed on a VDI host in order for it to communicate with the hypervisor and provide the remote desktop services.

To check the RAS VDI Agent status:

1. First, you can look at the **Agent State** column in the **VDI Hosts** list. If there's a problem with the agent, the column will display an appropriate error message.
2. Right-click a host and then click **Check Agent** in the context menu. The **VDI Agent Information** dialog opens displaying the information about the VDI Agent, VDI Services, and other related info.
3. If the VDI Agent is not installed, click the **Install** button and follow the instructions. Similarly, if VDI Services are not enabled, enable them.

Installing RAS VDI Agent Manually

You may need to install the RAS VDI Agent on a VDI host manually if the automatic push installation cannot be performed. For instance, an SMB share may be not be available or the firewall rules may interfere with the push installation, etc.

Installing RAS VDI Agent Manually

To install the agent:

1. Log into the server where the RAS VDI Agent is to be installed using an administrator account and close all other applications.
2. Copy the Parallels Remote Application Server installation file (`RASInstaller.msi`) to the server and double-click it.
3. Once prompted, click **Next** and accept the End-User license agreement.
4. Specify the path where the RAS Agent should be installed and click **Next**.
5. Select **Custom** and click **Next**.
6. Click on the RAS VDI Agent and select **Entire Feature will be installed on local hard drive** from the drop-down menu.
7. Ensure that all other components are deselected and click **Next**.
8. Click **Install** to start the installation. Click **Finish** once the installation is finished.

The RAS VDI Agent does not require any configuration. Once the agent is installed, highlight the server name in the RAS Console and click **Check Agent**. If the agent is installed properly, the status should change to **Agent Installed**.

Uninstalling RAS VDI Agent

To uninstall the RAS VDI Agent from a server:

1. Navigate to **Start** > **Control Panel** > **Programs** > **Uninstall a Program**.
2. Find **Parallels Remote Application Server** in the list of installed programs.
3. If you don't have any other Parallels RAS components on the server that you want to keep, right-click **Parallels Remote Application Server** and then click **Uninstall**. Follow the instructions to uninstall the program. You may skip the rest of these instructions.
4. If you have other RAS components that you want to keep on the server, right-click **Parallels Remote Application Server** and then click **Change**.
5. Click **Next** on the Welcome page.
6. On the **Change, repair, or remove** page, select **Change**.
7. On the next page, select **Custom**.
8. Select **RAS VDI Agent**, then click the drop-down menu in front of it, and click **Entire feature will be unavailable**.
9. Click **Next** and complete the wizard.

Installing an Appliance and Configuring a VDI Host

For some hypervisors, such as VMware and XenServer, you have to configure and run a virtual appliance on a VDI host instead of the RAS VDI Agent. A virtual appliance is a virtual machine image pre-configured in a certain way, which you can designate as RAS VDI Agent.

Installing the Appliance

For the information about how to install an appliance, refer to the **VDI Agent Technology** section (p. 79).

Configuring a VDI Host

To configure a VDI host, select it in the **Virtual Desktop Hosts** list and click **Tasks** > **Properties**. The **Host Properties** dialog opens.

Note: Some of the properties described below may be unavailable on some servers. This depends on the type of the hypervisor installed on the host server.

Enabling or Disabling a VDI Host in the Farm

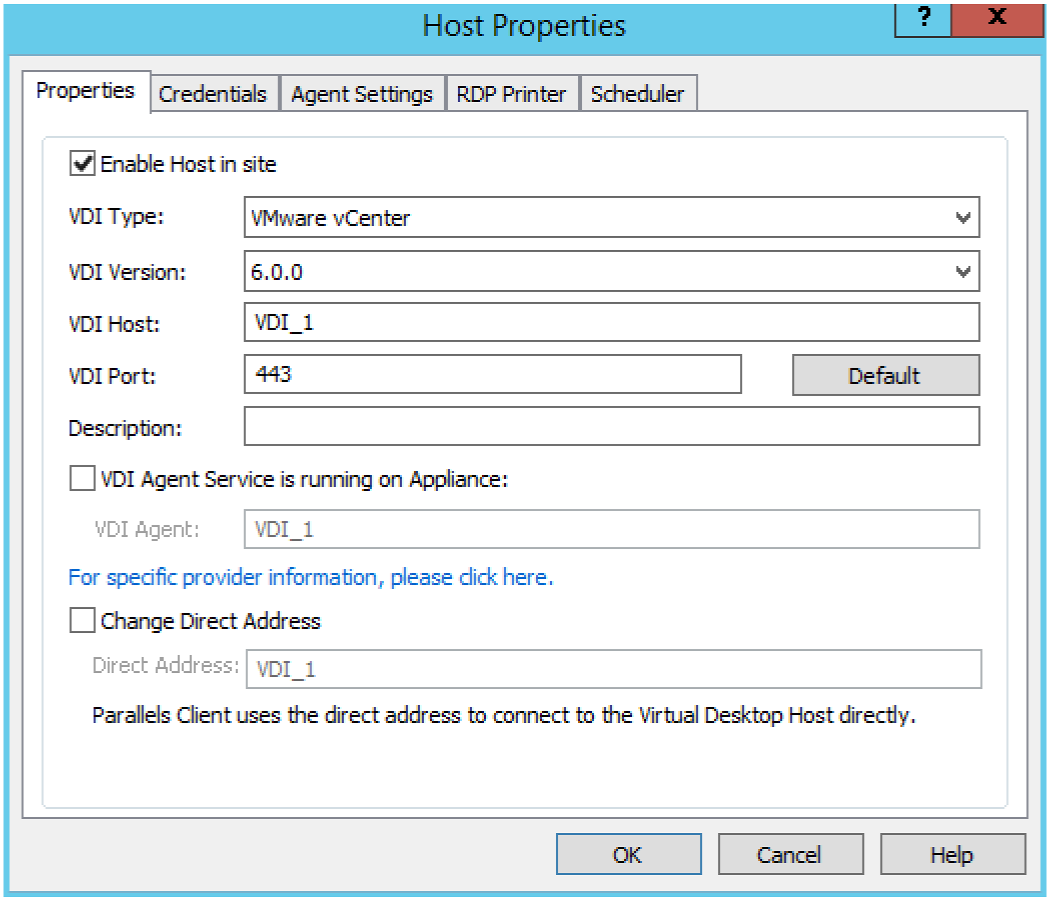
By default a VDI host is enabled in the farm. When it is disabled, published applications and virtual desktops cannot be served from it. To disable a host, clear the **Enable Host in site** option on the **Properties** tab page.

Configuring VDI Host Connection Settings

The following properties can be configured on the **Properties** tab page:

- **VDI Type**. Virtualization technology type.
- **VDI Version**. A version of the selected virtualization technology. If the hypervisor version that you are using is not listed, select **Other**.
- **VDI Host**. The VDI host IP address.
- **VDI Port.** Port number on which the VDI host listens for incoming connections.
- **VDI Agent**. **T**he appliance IP address (if the agent is running on an appliance).

- **Change Direct Address**. If selected, allows to specify the IP address that can be used by Parallels Clients to directly connect to the host. The direct address is only used in the Direct Connection mode and it could be an internal or external IP address.



Host Properties

☑ Enable Host in site

VDI Type: VMware vCenter

VDI Version: 6.0.0

VDI Host: VDI_1

VDI Port: 443

Description:

☐ VDI Agent Service is running on Appliance:

VDI Agent: VDI_1

For specific provider information, please click here.

☐ Change Direct Address

Direct Address: VDI_1

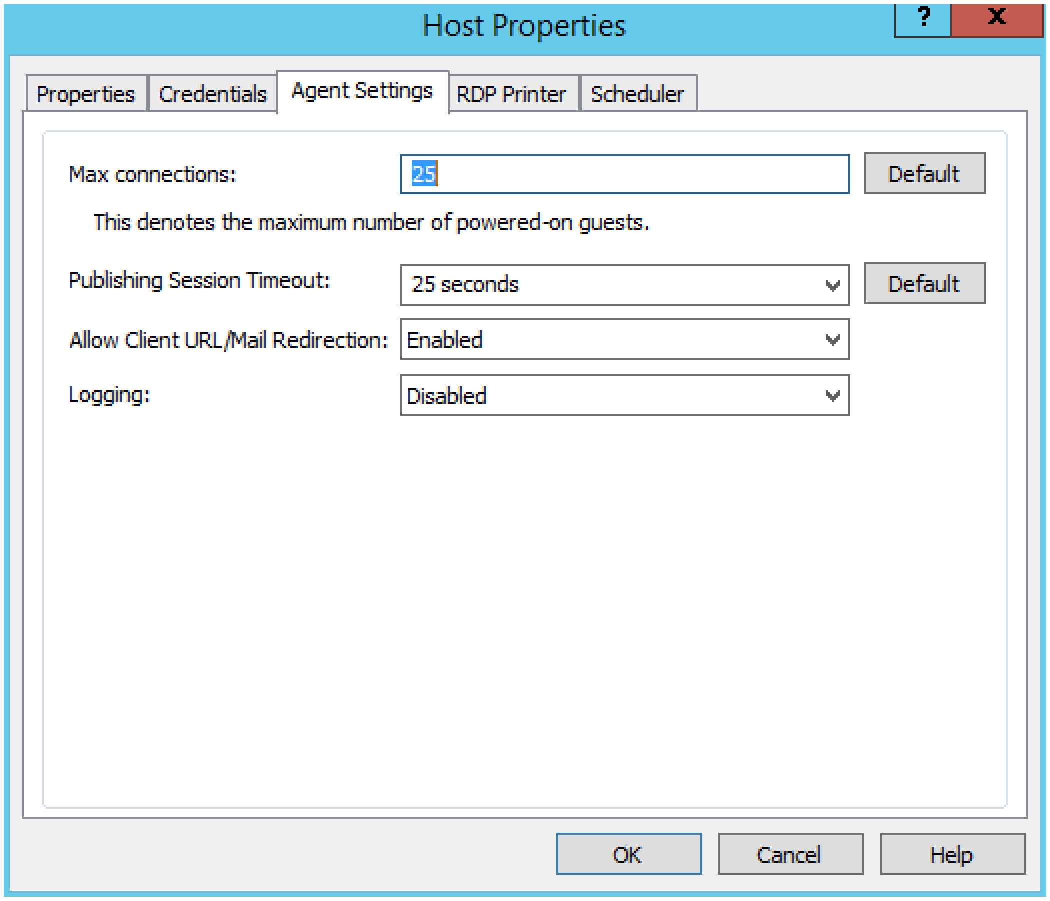
Parallels Client uses the direct address to connect to the Virtual Desktop Host directly.

Specifying Credentials

On the **Credentials** tab page, specify the user name and password to log into the VDI host. Click the **Check Credentials** button to verify the credentials that you've entered.

Configuring the RAS VDI Agent on the Server

Each VDI host in the farm has the RAS VDI Agent installed (or running as an appliance). The VDI agent can be configured on the **Agent Settings** tab page.



Max connections: 25

This denotes the maximum number of powered-on guests.

Publishing Session Timeout: 25 seconds

Allow Client URL/Mail Redirection: Enabled

Logging: Disabled

- **Max Connections**. Specifies the maximum allowable number of powered-on guest VMs.
- **Publishing Session Timeout**. Specifies the amount of time each session remains connected in the background after the user has closed the published application. This option is used to avoid unnecessary reconnections with guest VMs.
- **Allow Client URL/Mail Redirection**. Select this option to allow http and mailto links to be opened using a local application on the client computer rather than the server resources.
- **Logging**. Enable or disable the RAS VDI Agent logging. Logging should only be enabled if instructed by the Parallels RAS Support.

Configuring RDP Printing

The **RDP Printer** tab allows you to configure the renaming format of redirected printers. The format may vary depending on which version and language of the server you are using. Select the **RDP Printer Name Format** option specifically for the configured server:

- **Printername (from Computername) in Session no.**
- **Session no. (computername from) Printername**
- **Printername (redirected Session no)**

The other RDP Printing options available in the RDP Printer tab are:

- **Remove session number from printer name**
- **Remove client name from printer name**

Configuring VDI Host Maintenance Time Window

The **Scheduler** tab page allows you to create a maintenance time window for the server. During this time, published resources won't be accessible from that server.

To configure a maintenance time window click **Tasks** > **Add** and then set the following options:

- **Start date**
- **Time**
- **Duration**
- **Repeat**

The **On disable** option allows you to specify what should happen to current sessions when a scheduled task triggers.

Using Parallels RAS Templates

Parallels RAS Templates are used to automate the creation and deployment of guest VMs in Parallels Remote Application Server. A RAS Template is created as a copy of an existing guest VM but cannot run as a regular virtual machine. You can customize a RAS Template for use with Parallels Remote Application Server according to your needs. Once a template is ready, you can use it to create guest VM clones (copies) that will inherit all the properties of the template. Guest VMs are created as normal virtual machines from which you can serve applications, documents, desktops to your Parallels RAS users.

RAS Templates can only be created with the following versions of Windows as a guest OS:

- Windows XP SP3
- Windows Vista
- Windows 7
- Windows 8
- Windows 10

Read on to learn how to create and configure Parallels RAS Templates.

Creating a RAS Template

Note: To create a template from an existing virtual machine, the guest OS (Windows) must be configured to obtain an IP address from a DHCP server.

To create a RAS Template:

1. In the RAS Console, navigate to **Farm** / **Site** / **VDI Hosts**.
2. Select the **RAS Templates** tab in the right pane.
3. In the **Tasks** drop-down menu, click **Add**.
4. In the **Guest VM List** dialog, select a guest VM from which you would like to create a RAS Template and click **OK**.
5. In the next step, Parallels Remote Application Server will check if the source VM has the RAS Guest VM Agent installed. If the agent is not installed, click **Install** and then specify credentials to log into Windows in the VM. Click **Done** when finished. If the automatic installation of the RAS Guest VM Agent fails (e.g. an SMB share is not available or the firewall rules don't allow to perform a push installation), try installing it manually by running the main Parallels Remote Application Server installer (`RASInstaller.msi`) in Windows in the VM. Use the **Custom** installation option and select the **RAS Guest VM Agent** component to install.
6. In the **Guest VM Agent Information** dialog, click the **Make Template** button to create a RAS Template.
7. The source VM will be powered off and the template creation process will begin.

Read on to learn how to configure a RAS Template.

Configuring a RAS Template

Once the template is created, the template configuration wizard automatically opens. You need to complete the wizard before you can use the template to create virtual machines from it.

The RAS template configuration wizard consists of a few pages, which are described below.

Note: You can access the same configuration pages for an existing template by selecting it in the list and then clicking **Tasks** > **Properties**. This will open a dialog (instead of the wizard described below), but the pages and configuration options will be the same.

General

On the **General** page, specify the following options:

- **RAS Template.** Specify a name for the template.

- **Maximum guest VMs**. Specify the maximum number of guest VMs that can be created from this template. Once the number of existing guest VMs exceeds this number, a VM is deleted to comply with the limitation.
- **Pre-created guest VMs**. Specify the number of VMs that will be automatically created in advance. This is done in order to have some VMs ready right away. If all pre-created VMs are already in use and another one is needed, it will be created on demand.
- **Virtual machine name prefix**. Specify a name prefix for guest VMs. A VM ID will be appended to it to make the final VM name unique.
- **Delete unused guest VMs after the following period.** Enable this option to automatically delete VMs that haven't been used for a specified period of time. Use the drop-down list to specify the time period.

Advanced

On the **Advanced** page, specify the following options:

- **Folder**. Specify the folder where guest VMs created from this RAS Template will be stored. This option is available if you are using Hyper-V, Hyper-V Failover Cluster, VMware vCenter and Citrix XenServer.
- **Native Pool**. Specify the native pool to add the VMs to. This option is available if you are using VMware ESX and VMware vCenter.

SysPrep

On the **SysPrep** page, you can configure SysPrep settings in Windows inside the RAS Template.

Specify the following properties:

- **Computer name**. Computer name that should be assigned to a VM.
- **Owner name**. Owner name.
- **Organization**. Organization name.
- **Administrative password**. Local Windows administrator password.
- **Join domain**. Name of a domain for the VM to join.
- **Administrator**. Domain account.
- **Password**. Domain account password.
- **Target OU**. Full DN of an organizational unit. Click the [...] button to browse Active Directory and select an OU.

License Keys

On the **License Keys** page, specify the license key information that will be used to activate virtual machines created from this template.

First, select the license key management type that you are using in your organization (KMS or MAK):

Key Management Service (KMS): If you are using KMS, click the **Finish** button to save the template configuration information. Virtual machines that will be created from this template will look for KMS in DNS (at the end of the OS mini-setup and domain joining) and will be activated accordingly.

Multiple Activation Keys (MAK): If you are using MAK, do the following:

1. Click the **Add** button and type a valid key in the **License key** field.
2. In the **Max guest VMs** field, specify the maximum number of VMs that can be created from this template.
3. Click **OK**.
4. Click **Finish** to save the template configuration information.

If you need to change the template configuration later, select it in the RAS Templates list and click **Tasks** > **Properties**. Use the dialog that opens to view and modify the template properties.

How Guest VMs Are Created From a Template

After the RAS Template changes are committed to Parallels Remote Application Server, it will begin creating guest VMs from the template, one virtual machine at a time. The number of VMs that will be created is determined by the value specified in the **Pre-created guest VMs** field on the **Properties** page (see **Configuring a RAS Template** (p. 68)).

As soon as a user connects to an existing guest VM, Parallels Remote Application Server begins creating a new VM from the template, so the number of pre-created VMs remains unchanged. Please note that creating a new VM from a template takes some time. If a VM is in the middle of being created, and no other VMs are available, the user will have to wait until the VM is ready.

When a guest VM is no longer in use, and if the number of existing VMs exceeds the "pre-created" value, a VM is deleted after the time period specified in the **Delete unused guest VM after** field on the **Properties** page. If you didn't select that option, a VM is never deleted, but the total number of VMs will never exceed the value specified in the **Maximum guest VMs** field on the **Properties** page.

RAS Template Maintenance

In addition to viewing and modifying template configuration properties, you can perform a number of maintenance tasks on a template. These tasks are described below.

Viewing guest VMs created from a template

To view the list of guest VMs created from a template, select a template in the list and click **Tasks** > **Show guest VMs**. The **Template Guest VMs List** dialog lists the guest VMs and their relevant information. You can also see the remaining licenses info at the bottom of the screen.

Updating RAS Guest VM Agent inside a template

A RAS template should have the latest version of RAS Guest VM Agent installed in it. The agent is installed when you create a template. When a new version of RAS Guest VM Agent becomes available, it should be updated.

To check the RAS Guest VM Agent status inside a template, click **Tasks** > **Check agent**. If the agent is up to date, a message box will be displayed confirming this. If a newer version of RAS Guest VM Agent is available, you'll see a dialog asking if you want to update it. Click **Yes** to update the agent. If you click **No**, you can check the status again later and update the agent at that time.

Template Maintenance Mode

Maintenance mode is used to update Windows inside a RAS Template. For instance, if you want to install a server pack or a software update, you need to use the maintenance mode.

To install updates in Windows in a RAS Template:

1. Select a RAS Template and click **Tasks** > **Maintenance**. The template becomes disabled (grayed out), so all operations on it (including creating new guest VMs) are suspended.
2. Using native tools of the corresponding hypervisor, start the template as a normal virtual machine.
3. Install Windows updates or software as necessary.
4. When done, shut down the virtual machine.
5. Back in the RAS Console, select the template and click **Tasks** > **Maintenance** again to switch the maintenance mode off.

Please note that any updates applied to a template in the maintenance mode will only affect future clones. Existing guest VMs that were created from this template will not be affected, so if you want them to include these updates, you will have to delete them and create new VMs.

When you are done configuring a RAS Template, click the **Apply** button on the main RAS Console window to commit the changes to Parallels Remote Application Server.

VDI Host Pool Management

Pools offer administrators more flexibility when managing an extensive number of guest VMs, especially when they are implemented in large company infrastructures. The RAS Console provides you with the framework and tools needed to create a complete Pool Management foundation.

To manage pools, in the RAS Console, navigate to **Farm** / **Site** / **VDI Hosts** and then click the **Pool Management** tab.

Read on to learn how to:

- Add and Deleting Pools (p. 72)
- Add and Deleting Pool Members (p. 72)
- Configure Guest VMs in a Pool (p. 73)
- Use a Wildcard to Filter VMs (p. 74)

Adding and Deleting Pools

To add a pool, click the **Tasks** drop-down menu above the **Pools** list and then click **Add** (or click the plus-sign icon). Type a pool name and then click anywhere outside the edit field.

To delete a pool, right-click it and then click **Delete** (or click the minus-sign icon, or **Tasks** > **Delete**).

Adding and Deleting Pool Members

A VDI pool can contain different types of members. These could be all available guest VMs, specific guest VMs, guest VMs created from a template, and even other pools.

To add a member to a pool:

1 Select a pool in the **Pools** list.

2 In the **Tasks** drop-down menu above the **Members** list, click **Add** and choose a member type from the following list:

- **All guest VMs in site**. All guest VMs on all VDI hosts that are located on the site.
- **All guest VMs in host**. All guest VMs that are located on a particular VDI host. After clicking this options, you'll be able to select a VDI host.
- **Guest VM**. A specific guest VM located in the farm. After clicking this options, you'll be able to select a guest VM from the list.

- **Native pool**. A group of guest VMs that were natively configured in the hypervisor as a pool. Please note that a hypervisor may use a different term for pools (e.g. "resource pools"). After clicking this option, you'll be able to select a native pool from the list, if any are available.
- **Pool**. An existing pool in the Parallels Remote Application Server (pool nesting). After clicking this option, you'll be able to select an existing pool from the list.
- **RAS template**. Guest VMs that are automatically created from a RAS Template. After selecting this option, you'll be able to select a RAS template. For more information about RAS Templates, refer to **Managing RAS Templates** (p. 67).

3 After you click one of the above menu items (except **All Guest VMs in Site**), you will be presented with the list of the available hosts, guest VMs, pools, or templates from which you can make your selection. The **All guest VMs in site** item is simply added to the member list as it adds all available guest VMs to the pool.

To delete a member from a pool, select the pool, then select a pool member you wish to delete, and then click **Tasks** > **Delete**.

Configuring Guest VMs in a Pool

To configure a guest VM included in a pool, select a pool and then click **Tasks** > **Show guests in pool** to open the **Virtual Guests List** dialog.

Checking the RAS Guest VM Agent Status

A guest VM should have the RAS Guest VM Agent installed in it. The agent is installed by default when a guest VM is created from a RAS Template. If a guest VM was created outside the RAS Console using the native hypervisor tools, it may not have the RAS Guest VM Agent installed in it. In such a case, the guest VM will be able to serve only the desktop, but no applications or documents. As a general rule, it is advisable that the RAS Guest VM Agent be installed in a guest VM.

To check if the RAS Guest VM Agent is installed in a guest VM:

1 Select a guest VM in the list and then click **Tasks** > **Check Agent**.

2 The **Guest VM Agent Information** dialog opens displaying the information about the RAS Guest VM Agent.

3 If the agent is not installed, click the **Install** button and follow the instructions. The agent will be push installed in Windows running inside the guest VM.

Performing Guest VM Power Operations

The power operations icons at the bottom of the dialog allow you to start, stop, suspend, and reset a guest VM.

Configuring Guest VM Properties

To view and modify properties of a guest VM:

Select a guest VM and click **Tasks** > **Properties**. The **Guest VM Advanced Settings** dialog opens. In the dialog, configure the following properties:

- **Do not use this guest VM**. If selected, the guest VM will not be used.
- **Computer name**. Specifies the network name (domain name / IP address) that the system will use to connect to this guest VM.
- **Port**. Specifies the port number that the system will use to connect to this guest VM.
- **Override default settings**. If cleared, the default settings will be used for the grayed out properties. To override the default settings, select this option and specify your own values.
  - To view and modify the default settings, click the **Default Settings** button. See **Configuring Default Guest VM Properties** below for the info on how to set the default settings.
- **Connection timeout**. If a connection with the guest VM cannot be established in this time period, Parallels Remote Application Server will cancel the attempt to connect.
- **Protocol**. Specifies a protocol that Parallels Remote Application Server will use to communicate with the guest VM.
- **If session disconnects**. Specifies the action that should be taken if a user disconnects from a session. Use the **after** field to specify the amount of time that has to pass before the selected action takes place.
- **End a disconnected session**. Specifies whether (and when) the disconnected session should be ended. Please note that the user can reconnect to a previous session if the session is still available.

Click **OK** to save the changes and close the dialog.

Configuring Default Guest VM Properties

To configure default guest VM settings, in the **Virtual Guest VM List** dialog, click **Tasks** > **Default settings** (or click the gear icon). Use the **Default Guest VM Advanced Settings** dialog to specify the default settings. See above for the explanation of what these properties represent.

Using a Wildcard to Filter VMs

Use the **Wildcard** input field at the bottom of the **Pool management** tab to specify a wildcard to indicate which guest VMs should be available for users. If a VM name matches the wildcard, it will be available. If not, the users will not be able to use it. Use the the asterisk operator (*) to specify a wildcard (e.g. `ABC*`, `*ABC*`).

Persistent Guest VMs

When an application or a desktop published from a guest VM is set as persistent, the first time a user launches the application or desktop, the publishing agent will create a persistent guest VM rule. Persistent guest VM rules can be configured on the **Persistent guest VMs** tab page.

Deleting a Persistent Guest VM Rule

To delete a persistent guest VM rule, highlight the rule on the **Persistent guest VMs** tab page and click **Tasks** > **Delete**. If you want to delete all rules, select all rules by pressing CTRL+A and press the delete key.

Configuring Automatic Deleting of Persistent Guest VM Rules

In the **Auto remove persistence if guest VM was not used for** drop-down menu (at the bottom of the **Persistent guest VMs** tab) you can specify the maximum time an unused persistent guest VM rule is kept before being automatically deleted. Alternately, you can also manually type in the desired time, for example 1 week 3 days.

Publishing from a Guest VM

This section describes how to publish resources hosted by a guest VM. The publishing functionality described here is accessed from the **Publishing** category in the RAS Console.

Read on to learn how to publish resources from a guest VM.

Publishing a Virtual Desktop from a Guest VM

To publish a virtual desktop from a guest VM or guest VM clone, follow the below procedure:

1. In the RAS Console, select the **Publishing** category and click the **Add** icon below the **Published Resources** tree. This will launch the publishing wizard.
2. In the first step of the wizard select **Desktop** and click **Next**.
3. On the **Select Desktop Type** page, select **Virtual Desktop** and click **Next.**
4. On the **Virtual Desktop** page, enter a virtual desktop name, an optional description, and change the icon if needed.
5. In the **Properties** section, specify from where the virtual desktop should be published.

   First, you need to select an option in the **Connect to** drop-down list and then specify an additional parameter in the field below it, as explained below:

   - **Any guest VM**. Use the **from Pool** drop-down list to specify a pool.

- **Specific guest VM**. Specify a guest VM by expanding the **Guest** drop-down menu and then selecting a guest VM from a list.
- **Guest VM**. Specify the pool in the **from Pool** drop-down list and then specify **where name equals** Username or IP.
- **Specific RAS template**. Select a template by expanding the RAS Template drop-down list.

6 Select the **Persistent** option to create a persistent guest VM rule the first time the user connects.

7 In the **Desktop Size** section, specify the desktop screen resolution and size.

8 Click **Finish** when done.

Publishing an Application from a Guest VM

To publish an application from a guest VM or guest VM clone:

1. In the RAS Console, select the **Publishing** category and then click the **Add** icon below the **Published Resources** tree (or right-click inside the **Published Resources** box and click **Add** in the context menu). This will launch the publishing wizard.
2. On the **Select Item Type** wizard page, select **Application** and click **Next.**
3. On the **Select Server Type** page, select **Virtual guest VM** and click **Next**.
4. On the **Select Application Type** page, select **Single application** and click **Next**. The **Virtual Desktop Application** page opens.
5. Enter a name and an optional description.
6. In the **Run** drop-down menu, specify if the application should run in a normal window, maximized, or minimized.
7. In the **Target** field, specify the application that you want to publish. You may click the **[...]** button to browse for it.
8. In the **Start in** field, specify (or browse for) the "start in" folder. Use Windows environment variables if you are manually entering the path.
9. (Optional) In the **Parameters** input field, specify the parameters to pass to the application when it starts.
10. In the **Virtual guest VM settings** section, specify from where the application should be published.

    First, you need to select an option in the **Connect to** drop-down list and then specify an additional parameter in the field below it, as explained below:

    - **Any guest VM**. Use the **from Pool** drop-down list to specify a pool.
    - **Specific guest VM**. Specify a guest VM by expanding the **Guest** drop-down menu and then selecting a guest VM from the list.
    - **Guest VM**. Specify the pool in the **from Pool** drop-down list and then specify **where name equals** Username or IP.

- **Specific RAS template**. Select a template by expanding the RAS Template drop-down list.

11 Select the **Persistent** option to create a persistent guest VM rule the first time the user connects.

12 When done, click **Finish** to publish the application.

Publishing a Web Application from a Guest VM

A web application is like any other application that you can publish using the standard application publishing functionality. However, to simplify publishing of straight URL links to web applications, a separate publishing item type is available that allows you to accomplish this task with minimal number of steps.

To publish a web application:

1 In the RAS Console, select the **Publishing** category and then click the **Add** icon below the **Published Resources** tree (or right-click inside the **Published Resources** box and click **Add** in the context menu). This will launch the publishing wizard.

2 On the **Select Item Type** wizard page, select **Web application** and click **Next.**

3 On the **Select Server Type** page, select **Virtual guest** and click **Next**.

4 On the **Virtual Desktop Web Application** wizard page that opens, specify the web application name, description, window state, and the URL. Select the **Force to use Internet Explorer** option if needed. To browse for a specific application icon, click **Change Icon**.

5 Use the **Virtual guest VM settings** section to specify from where the application should be published.

The options are:

- **Any guest VM**. Publish the application from any guest VM in the selected pool. Select this option and then select a pool in the **from Pool** drop-down list.
- **Specific guest VM.** Publish the application from a specific guest VM. Select this option and then select a guest VM in the **from Pool** drop-down list.
- **Guest VM**. Select this option and then select a pool in **from Pool**. In the **where name equals** drop-down list, select **Username** or **IP**. The application will be published from a guest VM from the selected pool whose name/IP matches the username/IP of the user connecting.
- **Specific RAS template**. Publish the application from a specific RAS template. Select this option and then select a template in the **RAS template** drop-down list.

Select the **Persistent** option to create a persistent guest VM rule.

6 When done, click **Finish** to publish the application.

Publishing a Network Folder from a Guest VM

You can publishing a filesystem folder via UNC path to open in Windows explorer. To minimize the number of configuration steps, a special publishing item is available that allows you to publish a network folder from a guest VM.

To publish a network folder:

1. In the RAS Console, select the **Publishing** category and then click the **Add** icon below the **Published Resources** tree (or right-click inside the **Published Resources** box and click **Add** in the context menu). This will launch the publishing wizard.
2. On the **Select Item Type** wizard page, select **Folder on the file system** and click **Next.**
3. On the **Select Server Type** page, select **Virtual guest VM** and click **Next**.
4. On the **Virtual Desktop UNC Folder** wizard page, specify the usual application properties.
5. In the **UNC path** field, enter the UNC path of the folder you wish to publish. Click the **[...]** button to browse for a folder (it may take some time for the **Browse for Folder** dialog to open).
6. Specify the **Virtual guest VM settings** as described in **Publishing an Application from a Guest VM** (p. 76).
7. Click **Finish** to publish the folder and close the wizard.

When published, the network folder will appear in the **Publishing** > **Published resources list**, just like any other application. To view its properties, select it and then click the **Virtual Desktop Application** tab:

- The **Target** property will always be set to `PublishedExplorer.exe`. This binary is created automatically (via agents pushing) and is simply a copy of the standard `explorer.exe` executable.
- The **Parameters** property specifies the network folder that we want to publish. The folder path can be in any format that the `explorer.exe` can handle.

Publishing a Document from a Guest VM

To publish a document from a guest VM or guest VM clone:

1. In the RAS Console, select the **Publishing** category and then click the **Add** icon below the **Published Resources** tree (or right-click inside the **Published Resources** box and click **Add** in the context menu). This will launch the publishing wizard.
2. On the **Select Item Type** wizard page, select **Document** and click **Next.**
3. Select **Virtual Guest VM** and click **Next**.
4. Specify the content type of the document you want to publish. You can select the content type from the predefined list or specify a custom content type in the **Custom content types** input field.

5 Click **Next**.

6 On the **Virtual Desktop Application** page, enter a name, an optional description, a Window state, and an icon if needed.

7 Use the **[...]** button next to the **Target** input field to browse for the document. All other fields will be automatically populated. To edit any of the auto populated fields, highlight them and enter the required details.

8 (Optional) In the **Parameters** input field, specify the parameters to pass to the application when it starts.

> **Note:** Use the **Server(s)** drop down list to specify different document settings for a specific server in case the document is configured differently on that particular server. The settings will be saved for each server you select individually.

9 In the **Virtual guest VM settings** section, specify from where the virtual desktop should be published.

First, you need to select an option in the **Connect to** drop-down list and then specify an additional parameter in the field below it, as explained below:

- **Any guest VM**. Use the **from Pool** drop-down list to specify a pool.
- **Specific guest VM**. Specify the guest VM by expanding the **Guest** drop-down menu and then selecting the guest from a list.
- **Guest VM**. Specify the pool in the **from Pool** drop-down list and then specify **where name equals** Username or IP.
- **Specific RAS template**. Select a template by expanding the RAS Template drop-down list.

10 Select the **Persistent** option to create a persistent guest VM rule the first time the user connects.

11 Click **Finish** to publish the document.

VDI Agent Technology

Before adding a server as a VDI host to a Parallels RAS site, you need to install a hypervisor on it.

Parallels Remote Application Server supports VDI hosts based on the following virtualization technologies:

- VMware ESXi
- VMware VCenter
- Microsoft Hyper-V
- Microsoft Hyper-V Failover Cluster

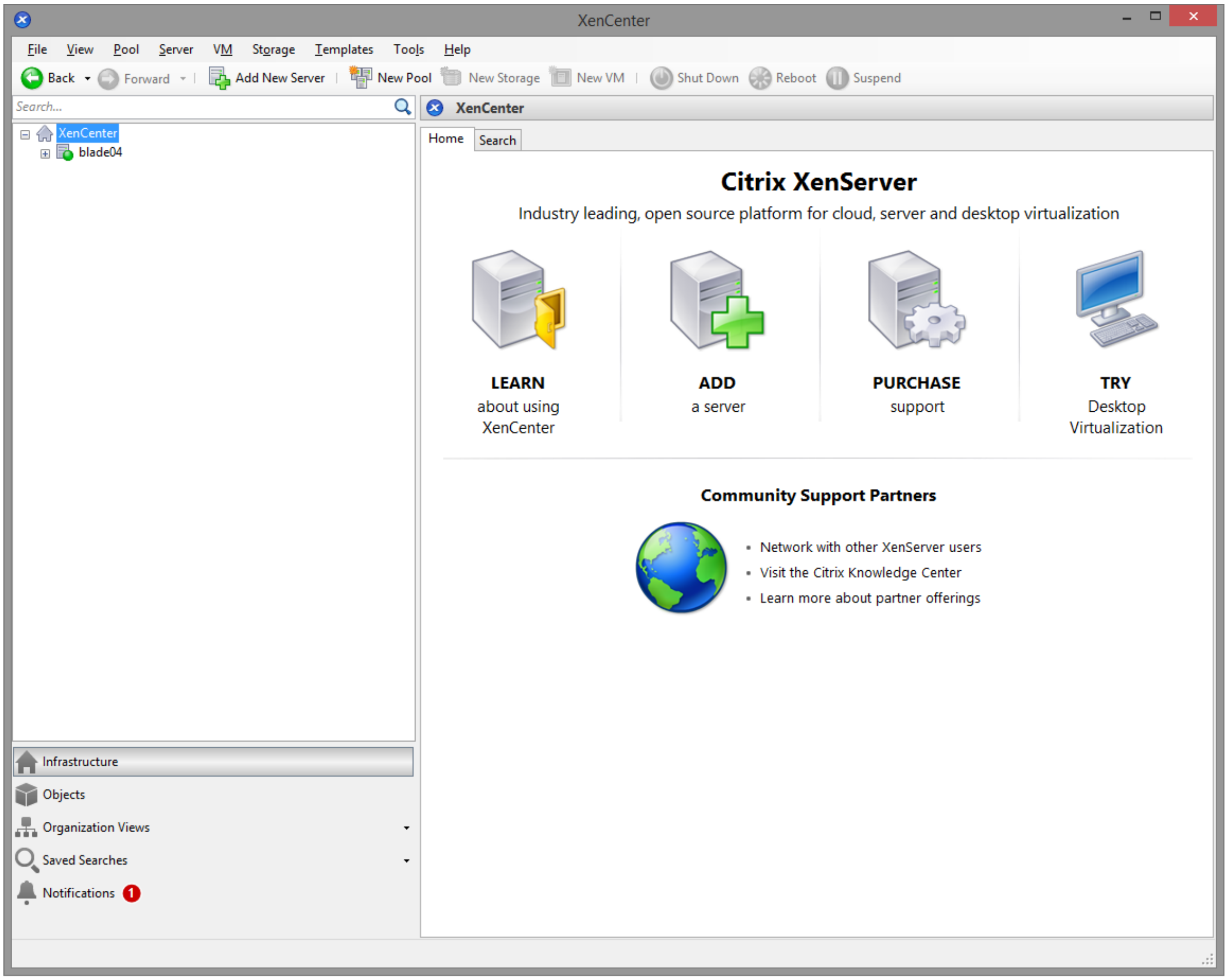
- Citrix XenServer

This section describes how to:

- Prepare Citrix XenServer for Parallels RAS (p. 80)
- Prepare Hyper-V for Parallels RAS (p. 88)
- Prepare VMware vSphere for Parallels RAS (p. 90)

Prepare Citrix XenServer for Parallels RAS

Before you set up your environment, please make sure that your XenCenter can connect to your Citrix XenServer.



Citrix XenServer

Industry leading, open source platform for cloud, server and desktop virtualization

Community Support Partners

- Network with other XenServer users
- Visit the Citrix Knowledge Center
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A guest operating system (Windows) must be created on the Citrix XenServer which features an RDP server.

Important: Ideally, the guest VM name should be the same as the computer name.

Please install XenServer tools in the guest OS.

After the guest OS installation is complete, make sure that the RDP server is started. To confirm that the server is running, launch a Remote Desktop Client and connect to the guest operating system using the computer name (of the guest OS) and the RDP port (default RDP port is 3389).

Setting up the RAS VDI Agent Appliance for Citrix XenServer

The RAS VDI Agent Appliance for Citrix XenServer can be downloaded from the following location:

```
http://download.parallels.com/ras/v15.5/RAS_VDI_Appliance.ova
```

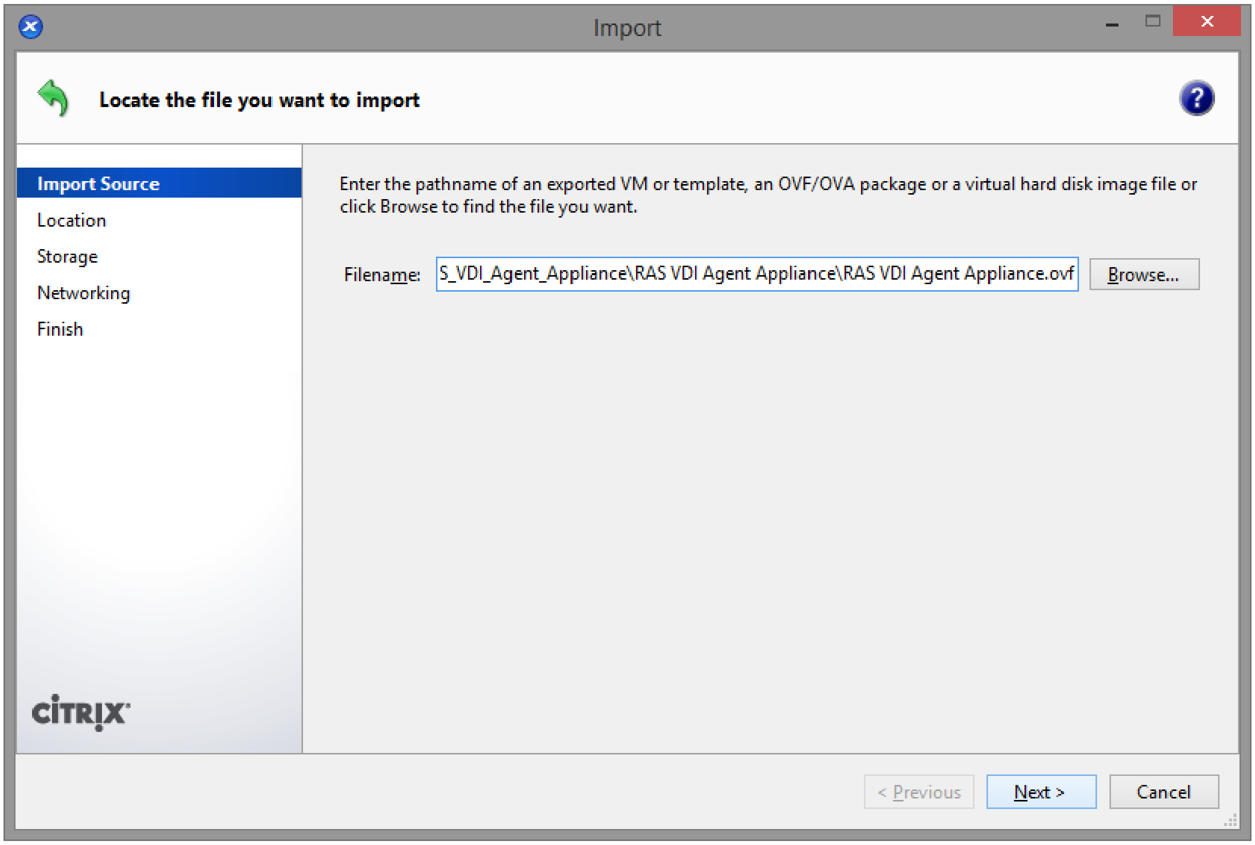
Once the RAS VDI Agent Appliance is downloaded, it must be installed on a server.

To install the appliance:

1 Extract the ZIP file contents into a temporary directory.

2 Open XenCenter.

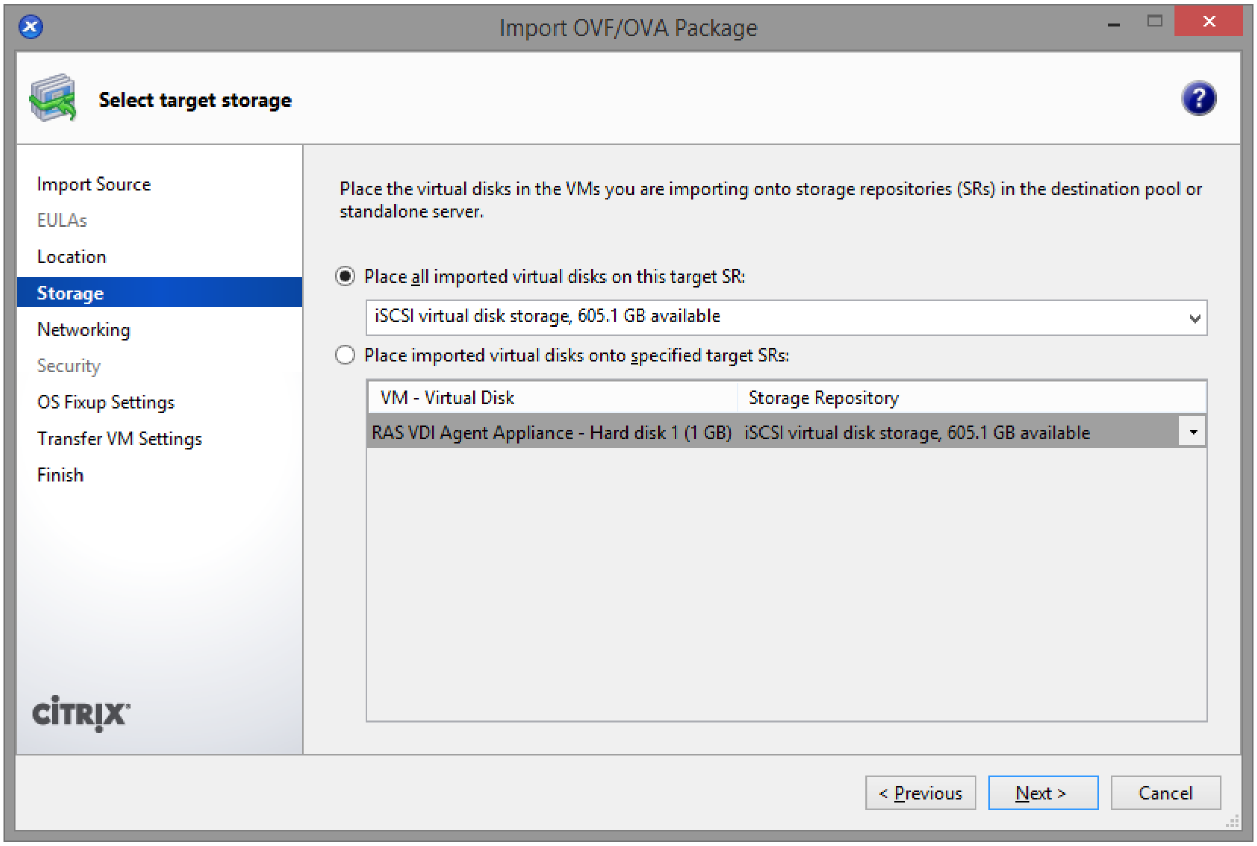
3 Right click on the host and choose **Import**.



Enter the pathname of an exported VM or template, an OVF/OVA package or a virtual hard disk image file or click Browse to find the file you want.

Filename: S_VDI_Agent_Appliance\RAS VDI Agent Appliance\RAS VDI Agent Appliance.ovf

4 Choose the OVA file extracted from step 1.



Select target storage

Place the virtual disks in the VMs you are importing onto storage repositories (SRs) in the destination pool or standalone server.

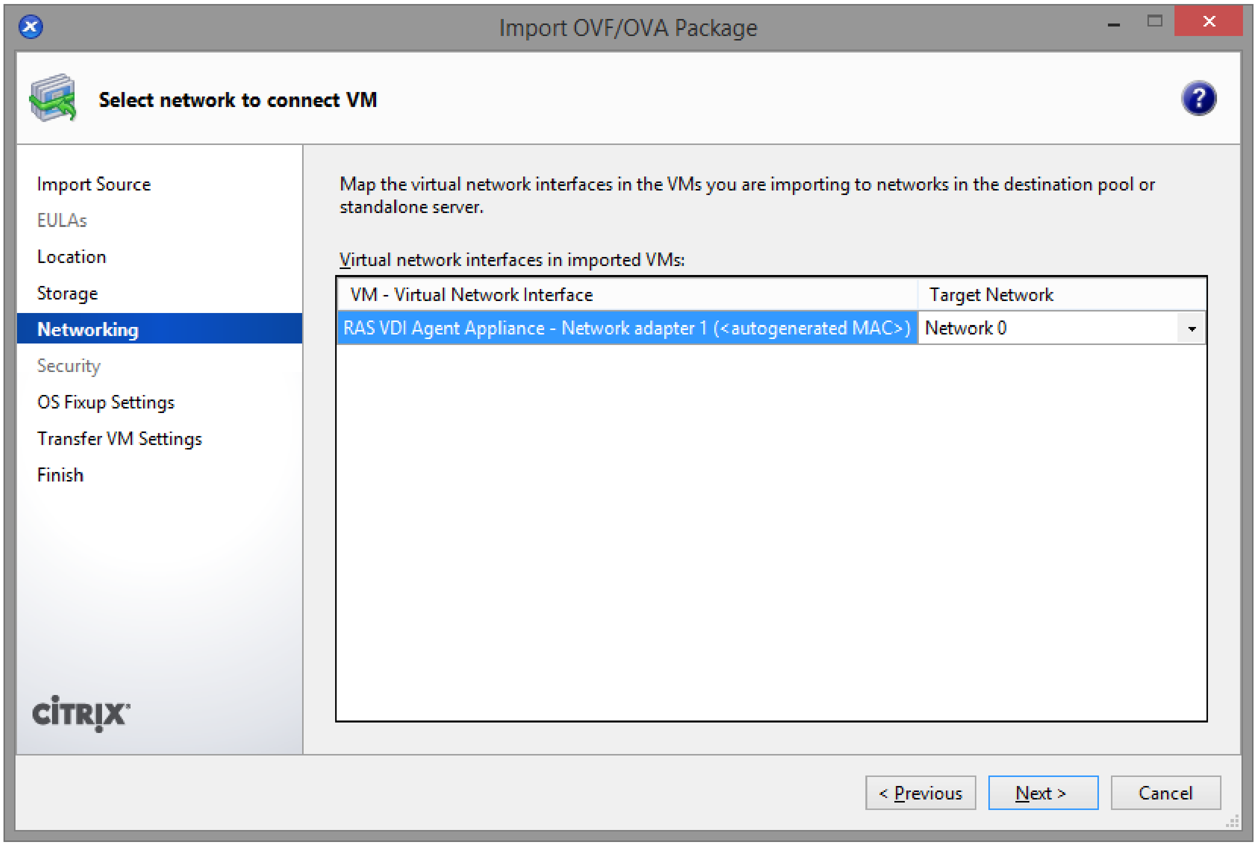
● Place all imported virtual disks on this target SR:

iSCSI virtual disk storage, 605.1 GB available

○ Place imported virtual disks onto specified target SRs:

VM - Virtual Disk	Storage Repository
RAS VDI Agent Appliance - Hard disk 1 (1 GB)	iSCSI virtual disk storage, 605.1 GB available

5 Choose the storage location and click **Next**.



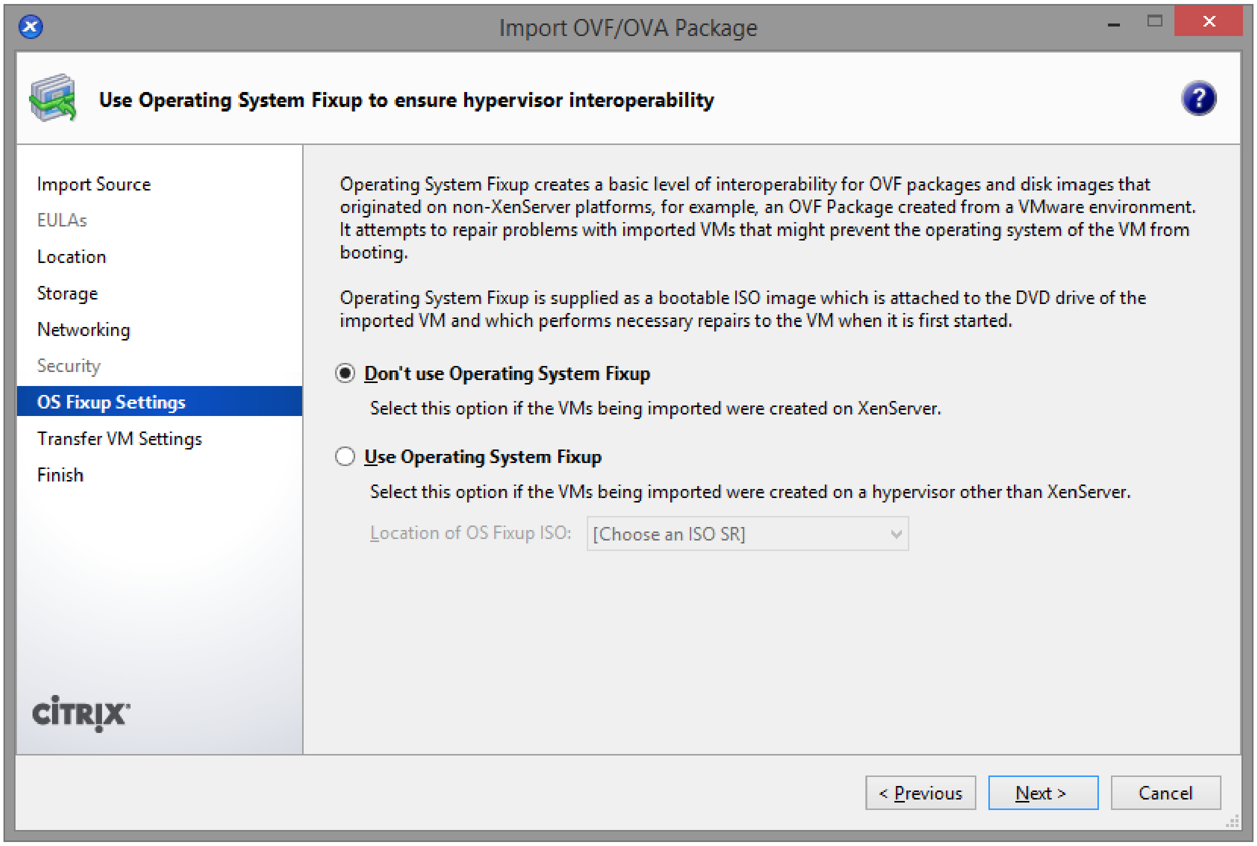
Select network to connect VM

Map the virtual network interfaces in the VMs you are importing to networks in the destination pool or standalone server.

Virtual network interfaces in imported VMs:

VM - Virtual Network Interface	Target Network
RAS VDI Agent Appliance - Network adapter 1 (<autogenerated MAC>)	Network 0

6 Configure the network settings and click **Next**.



Use Operating System Fixup to ensure hypervisor interoperability

Operating System Fixup creates a basic level of interoperability for OVF packages and disk images that originated on non-XenServer platforms, for example, an OVF Package created from a VMware environment. It attempts to repair problems with imported VMs that might prevent the operating system of the VM from booting.

Operating System Fixup is supplied as a bootable ISO image which is attached to the DVD drive of the imported VM and which performs necessary repairs to the VM when it is first started.

● **Don't use Operating System Fixup**

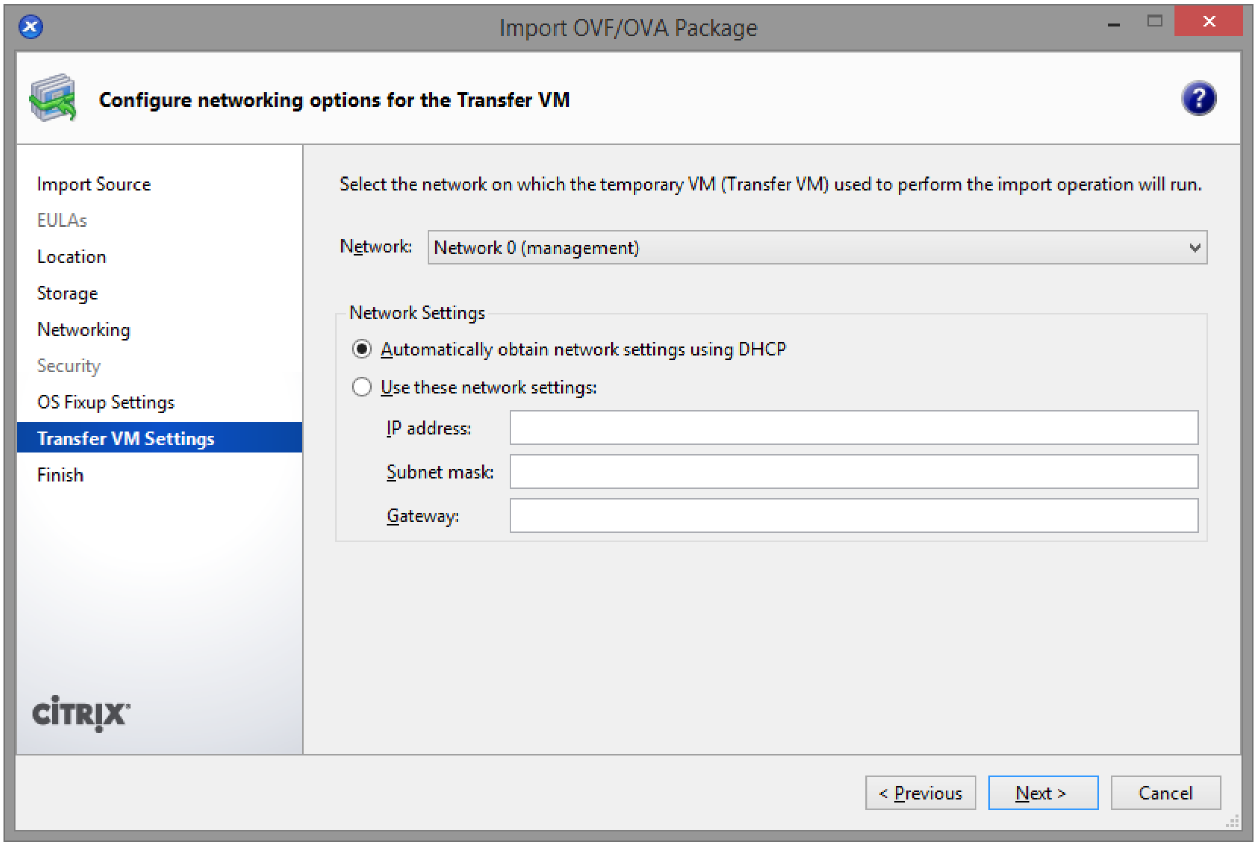
Select this option if the VMs being imported were created on XenServer.

○ **Use Operating System Fixup**

Select this option if the VMs being imported were created on a hypervisor other than XenServer.

Location of OS Fixup ISO: [Choose an ISO SR]

7 Choose not to use **Operating System Fixup**.



Import OVF/OVA Package

Configure networking options for the Transfer VM

Select the network on which the temporary VM (Transfer VM) used to perform the import operation will run.

Network: Network 0 (management)

Network Settings

● Automatically obtain network settings using DHCP

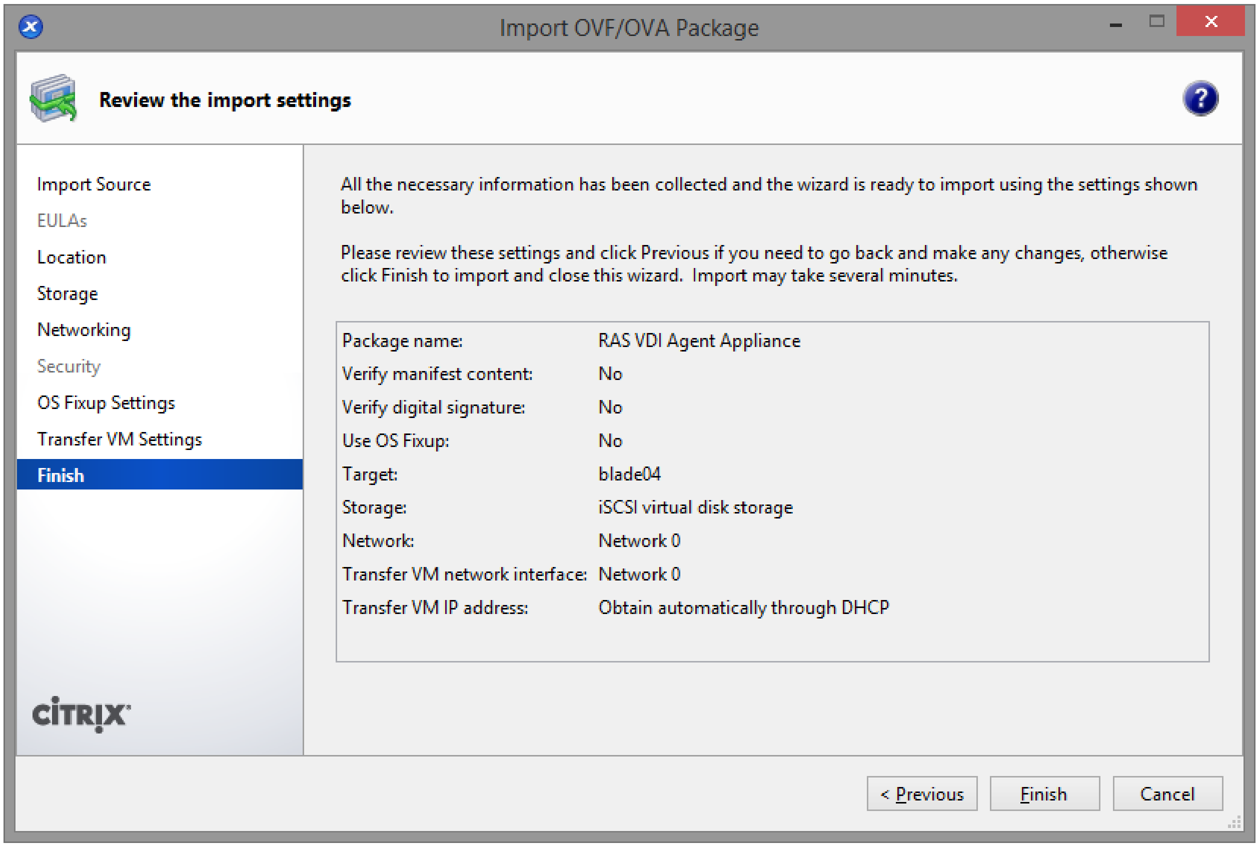
○ Use these network settings:

IP address:

Subnet mask:

Gateway:

8 Select the network for importing the appliance and click **Next**.

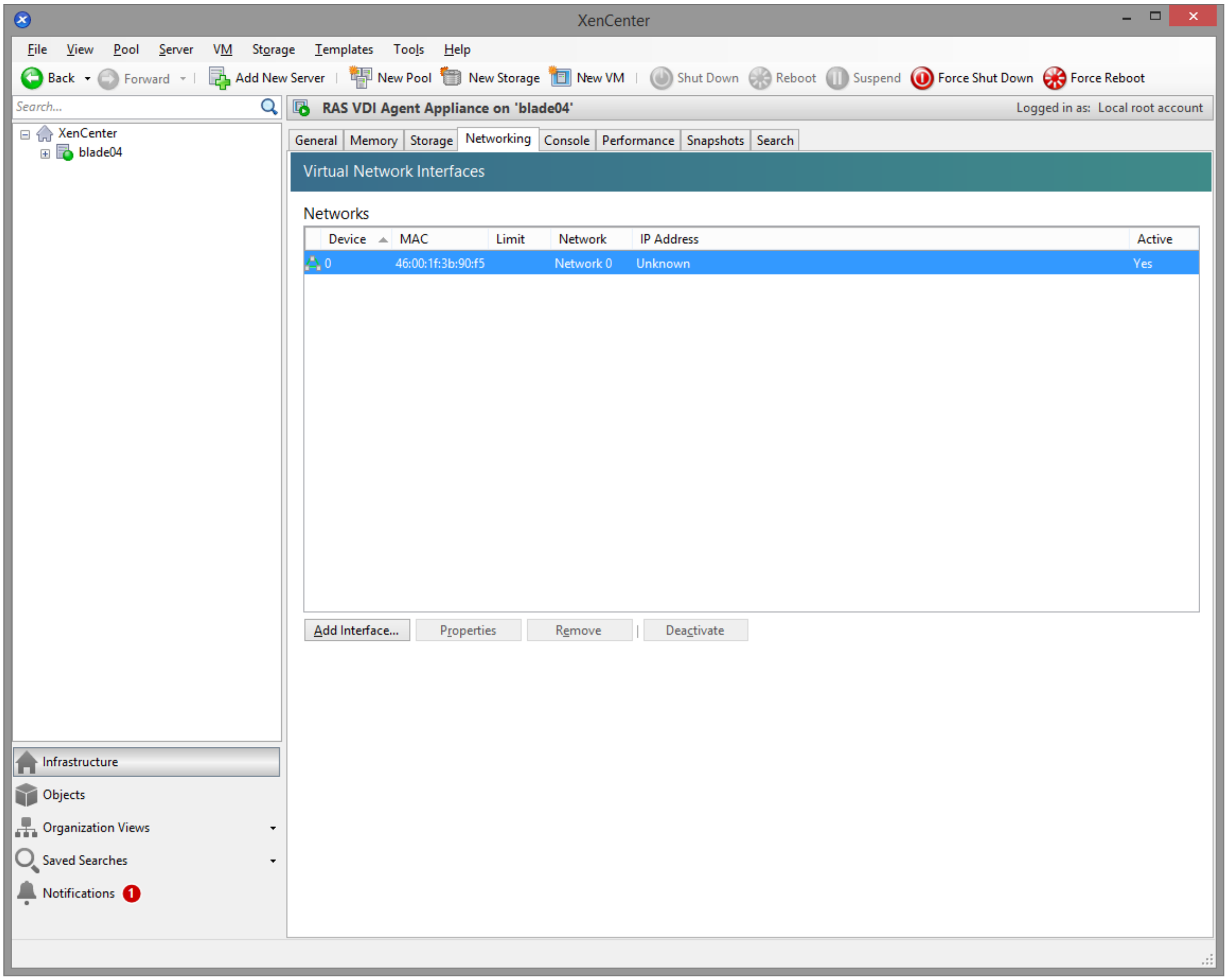


All the necessary information has been collected and the wizard is ready to import using the settings shown below.

Please review these settings and click Previous if you need to go back and make any changes, otherwise click Finish to import and close this wizard. Import may take several minutes.

Package name:	RAS VDI Agent Appliance
Verify manifest content:	No
Verify digital signature:	No
Use OS Fixup:	No
Target:	blade04
Storage:	iSCSI virtual disk storage
Network:	Network 0
Transfer VM network interface:	Network 0
Transfer VM IP address:	Obtain automatically through DHCP

9 Click **Finish** and wait for the import job to complete.


XenCenter
File View Pool Server VM Storage Templates Tools Help
Back Forward Add New Server New Pool New Storage New VM Shut Down Reboot Suspend Force Shut Down Force Reboot
Search...
XenCenter
blade04
General Memory Storage Networking Console Performance Snapshots Search
Add Interface... Properties Remove Deactivate
Infrastructure
Objects
Organization Views
Saved Searches
Notifications 1

RAS VDI Agent Appliance on 'blade04'

Logged in as: Local root account

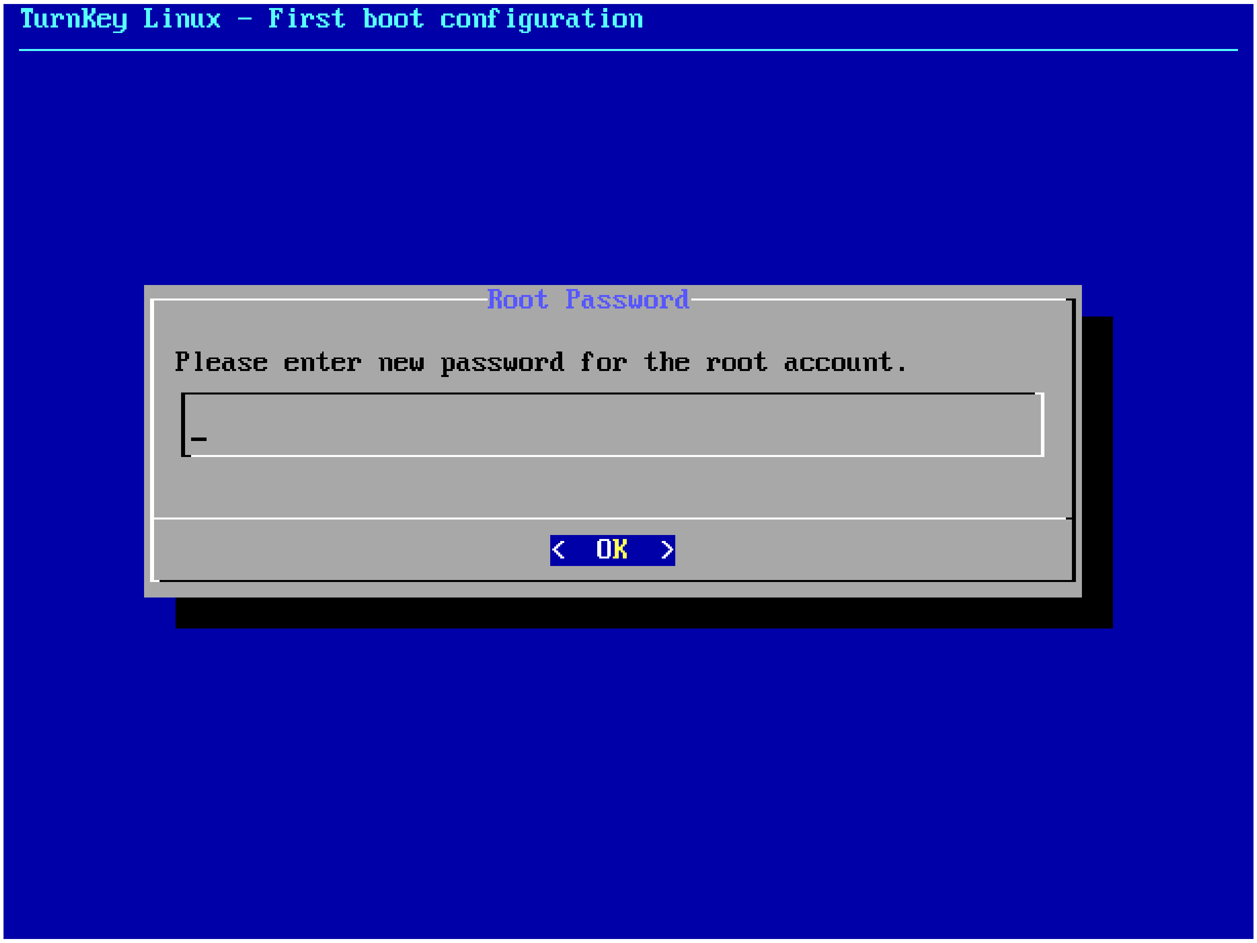
Virtual Network Interfaces

Networks

Device	MAC	Limit	Network	IP Address	Active
0	46:00:1f:3b:90:f5		Network 0	Unknown	Yes

The network administrator should assign a fixed IP address to the appliance.

When using DHCP, take note of the MAC address assigned to the appliance and add a DHCP reservation. If DHCP isn't available, a static IP address needs to be configured manually. Network settings can be changed by going to the **Advanced** > **Networking** menu.



```
TurnKey Linux - First boot configuration

Root Password

Please enter new password for the root account.
```

Prepare Hyper-V for Parallels RAS

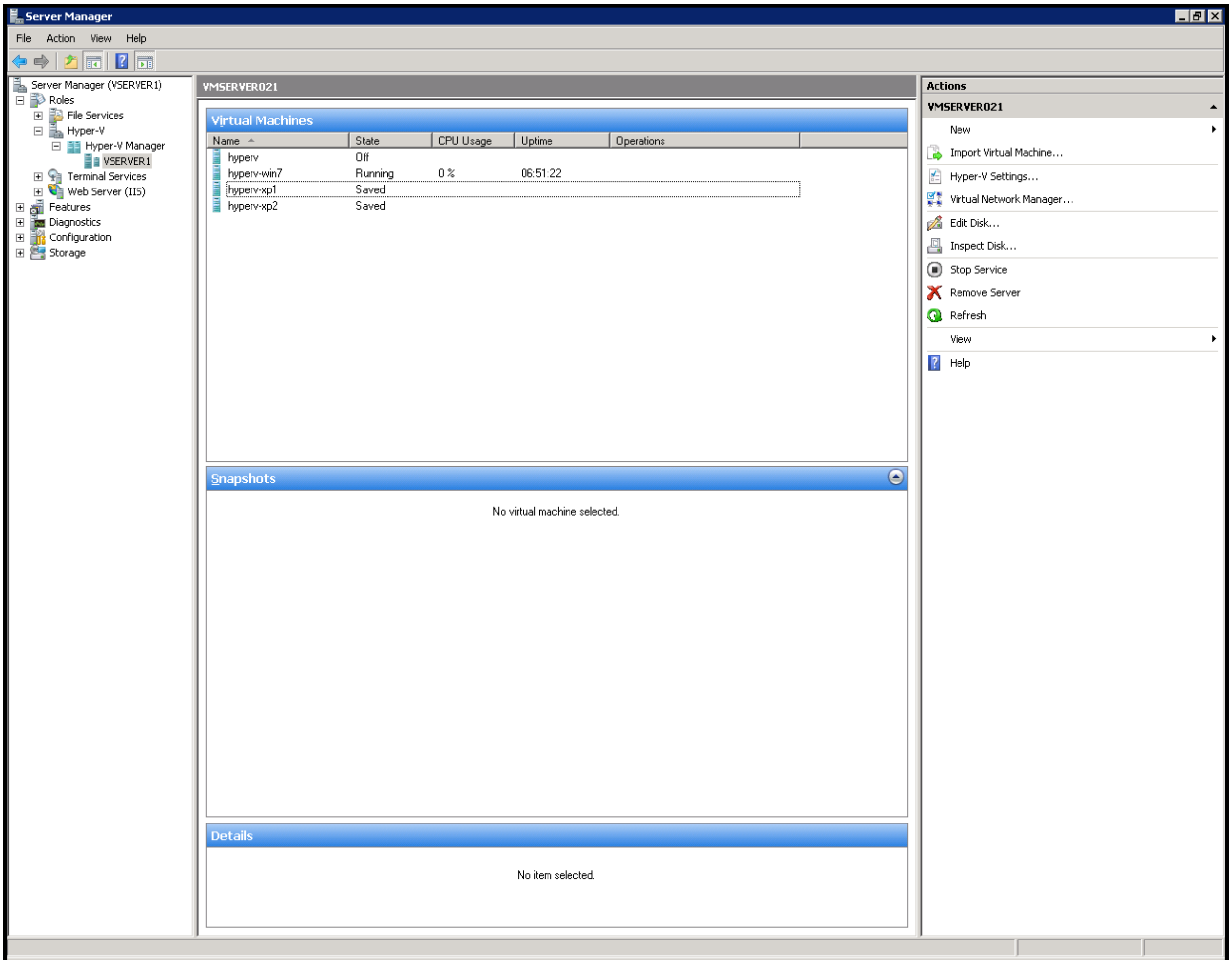
RAS VDI Agent System Requirements

- 6.0.6001 Windows Server 2008 Standard (Full / Server Core)
- 6.0.6001 Windows Server 2008 Enterprise (Full / Server Core)
- 6.0.6001 Windows Server 2008 Datacenter (Full / Server Core)
- 6.1.7601 Windows Server 2008 R2 Standard (Full / Server Core)
- 6.1.7601 Windows Server 2008 R2 Enterprise (Full / Server Core)
- 6.1.7601 Windows Server 2008 R2 Datacenter (Full / Server Core)

Windows Server 2016

- 6.1.7600 Hyper-V Server 2008 R2
- 6.2.9200 Windows Server 2012 Standard (Full / Server Core)
- 6.2.9200 Windows Server 2012 Datacenter (Full / Server Core)
- 6.2.9200 Hyper-V Server 2012
- 6.3.9600 Windows Server 2012 R2 Standard (Full / Server Core)
- 6.3.9600 Windows Server 2012 R2 Datacenter (Full / Server Core)
- 6.3.9600 Hyper-V Server 2012 R2
- 10.0.14300 Hyper-V Server 2016
- 10.0.14300 Windows Server 2016 Datacenter (Full / Server Core)
- 10.0.14300 Windows Server 2016 Standard (Full / Server Core)

Before continuing to set up your environment please make sure that Hyper-V is installed and that the role is enabled on your Windows Server.



Name	State	CPU Usage	Uptime	Operations
hyperv	Off			
hyperv-win7	Running	0 %	06:51:22	
hyperv-xp1	Saved			
hyperv-xp2	Saved			

No virtual machine selected.

No item selected.

A guest operating system (e.g. Windows) must be created on the Hyper-V server which features an RDP server.

Important:

- The guest VM name must be the same as the computer name.
- The use of fixed IPs on the guest operating systems is preferred.

After the guest OS installation is complete, make sure that the RDP server is started. To confirm that the server is running, launch a Terminal Server client on the host machine (the Hyper-V server) and connect to the guest operating system using the computer name (of the guest OS) and the RDP port (default RDP port is 3389).

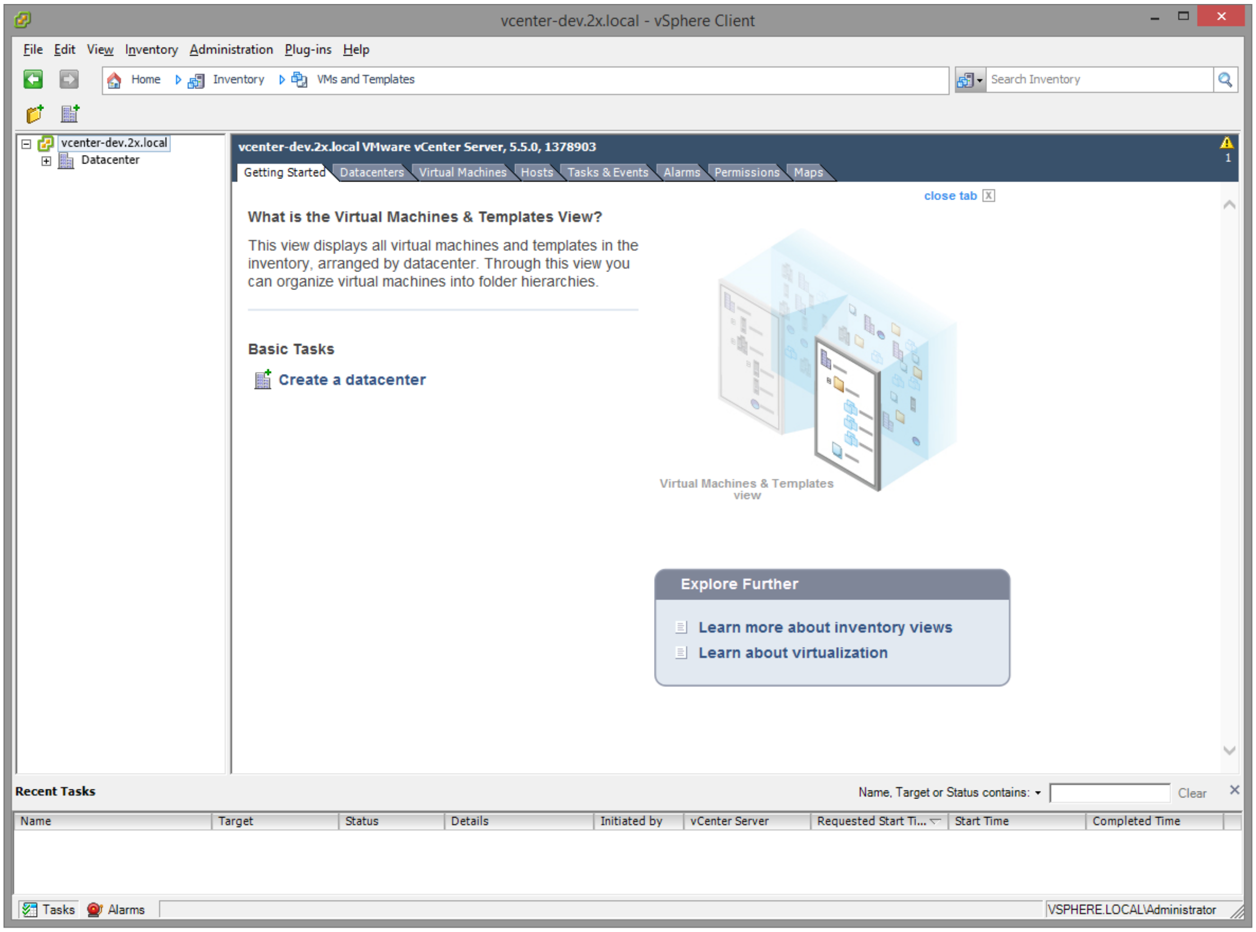
Prepare VMware vSphere for Parallels RAS

RAS VDI Agent System requirements

- VMware ESXi
- VMware vSphere Client
- VMware vCenter

Starting from vSphere v5.1 it's possible to use the vSphere Web Client instead of the native vSphere Client.

Before continuing to set up your environment, please make sure that your VMware vSphere Client can connect to your VMware vSphere server.



What is the Virtual Machines & Templates View?

This view displays all virtual machines and templates in the inventory, arranged by datacenter. Through this view you can organize virtual machines into folder hierarchies.

Basic Tasks

Create a datacenter

Explore Further

Learn more about inventory views

Learn about virtualization

A guest operating system (Windows) must be created on the VMware vSphere server which features an RDP server.

Ideally, the guest VM name should be equal to the computer name.

The use of fixed IPs on the guest operating systems is preferred.

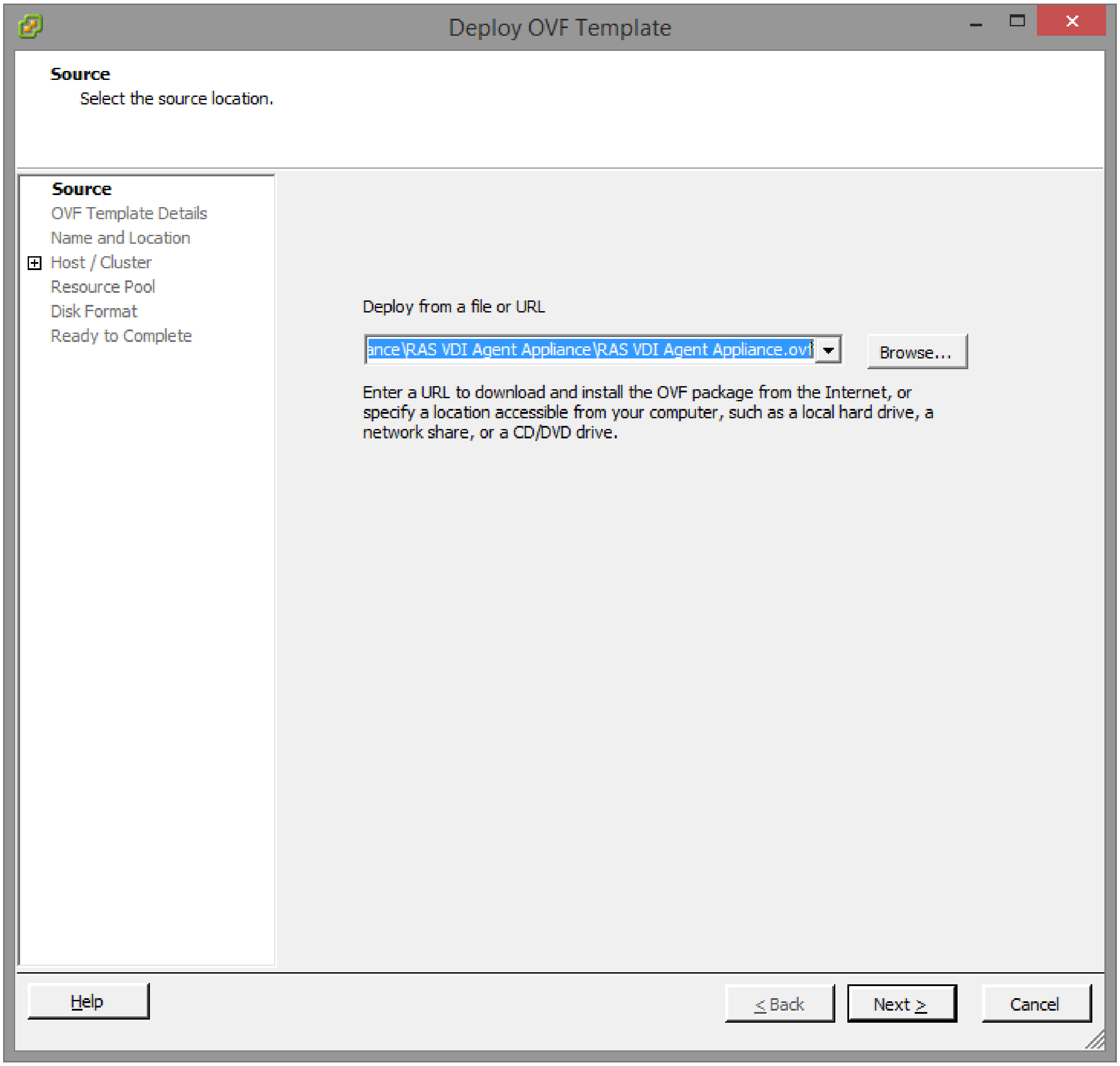
After the guest OS installation is complete, make sure that the RDP server is started. To confirm that the server is running, launch a Remote Desktop Client and connect to the guest operating system using the computer name (of the guest OS) and the RDP port (default RDP port is 3389).

Setting up the RAS VDI Agent Appliance for VMware vSphere

Instructions for the native vSphere Client:

1 Extract the ZIP file contents into a temporary directory.

2 Login with the VMware vSphere client.



Source

Select the source location.

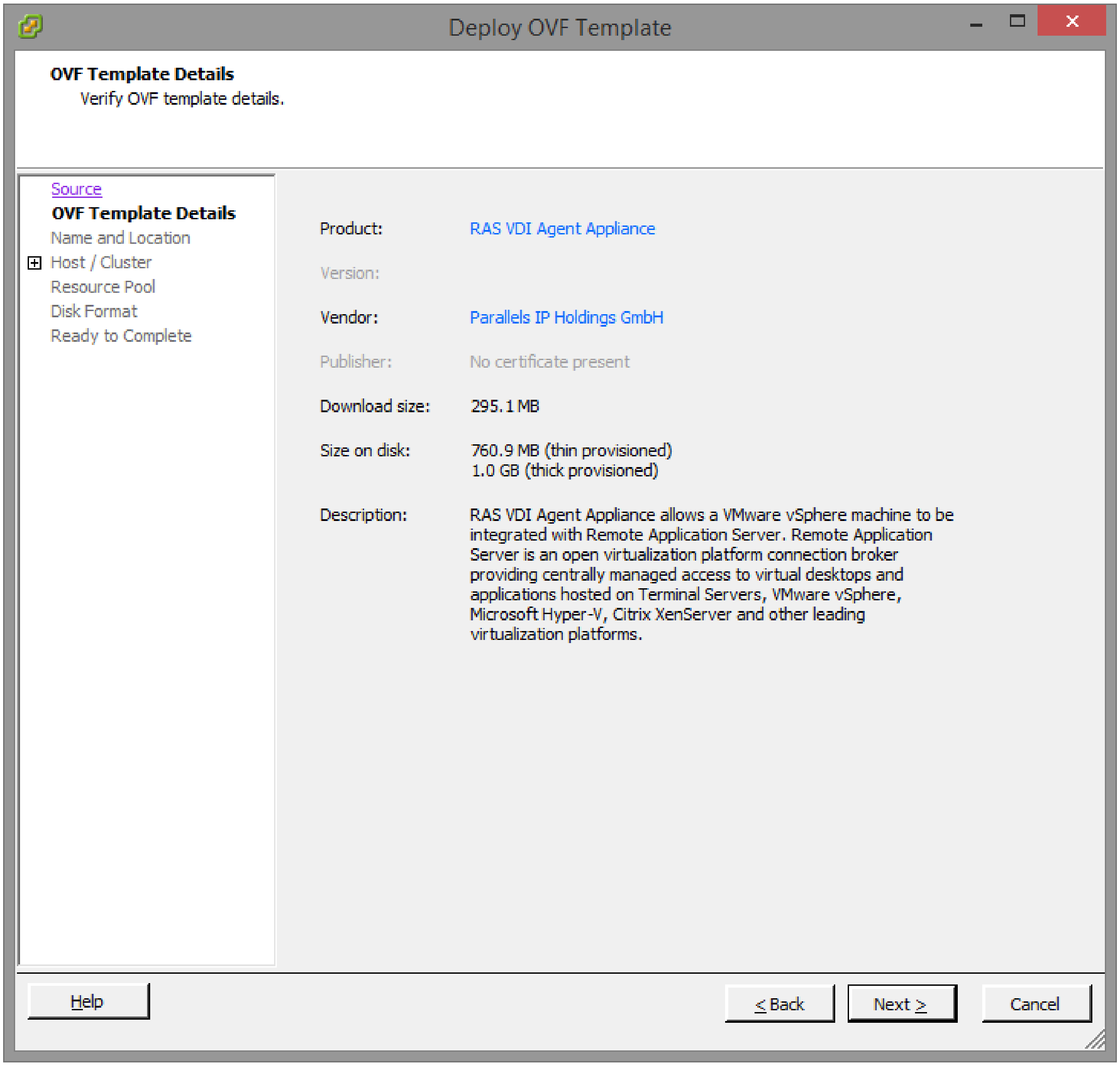
Deploy from a file or URL

ance\RAS VDI Agent Appliance\RAS VDI Agent Appliance.ovf

Enter a URL to download and install the OVF package from the Internet, or specify a location accessible from your computer, such as a local hard drive, a network share, or a CD/DVD drive.

3 Select **Deploy OVF Template** from the file menu.

4 Browse to the folder where the ZIP file (containing the appliance) was extracted and click **Next**.



OVF Template Details

Verify OVF template details.

Product: RAS VDI Agent Appliance

Version:

Vendor: Parallels IP Holdings GmbH

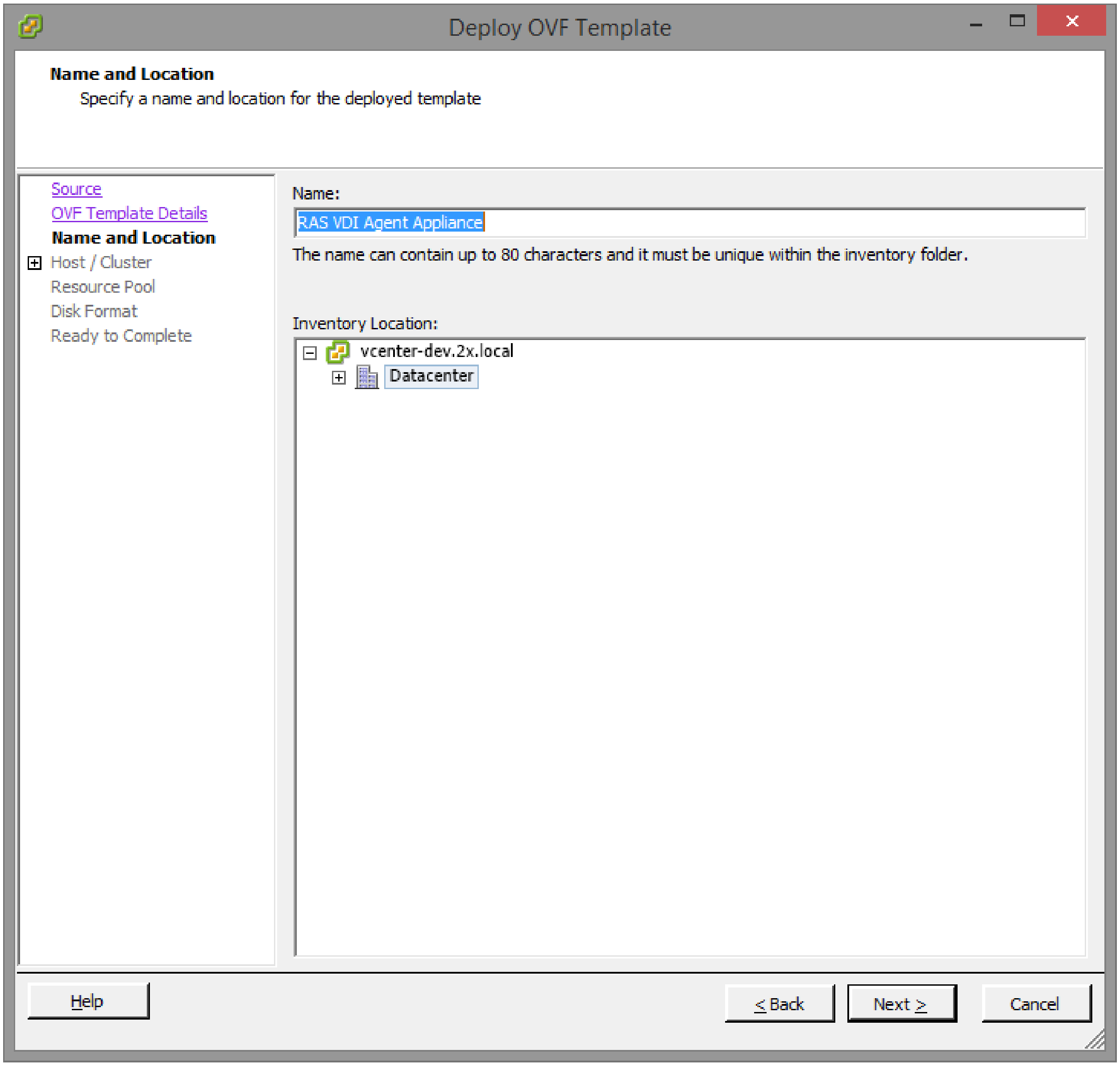
Publisher: No certificate present

Download size: 295.1 MB

Size on disk: 760.9 MB (thin provisioned)
1.0 GB (thick provisioned)

Description: RAS VDI Agent Appliance allows a VMware vSphere machine to be integrated with Remote Application Server. Remote Application Server is an open virtualization platform connection broker providing centrally managed access to virtual desktops and applications hosted on Terminal Servers, VMware vSphere, Microsoft Hyper-V, Citrix XenServer and other leading virtualization platforms.

5 Review product details and click **Next**.



Deploy OVF Template

Name and Location

Specify a name and location for the deployed template

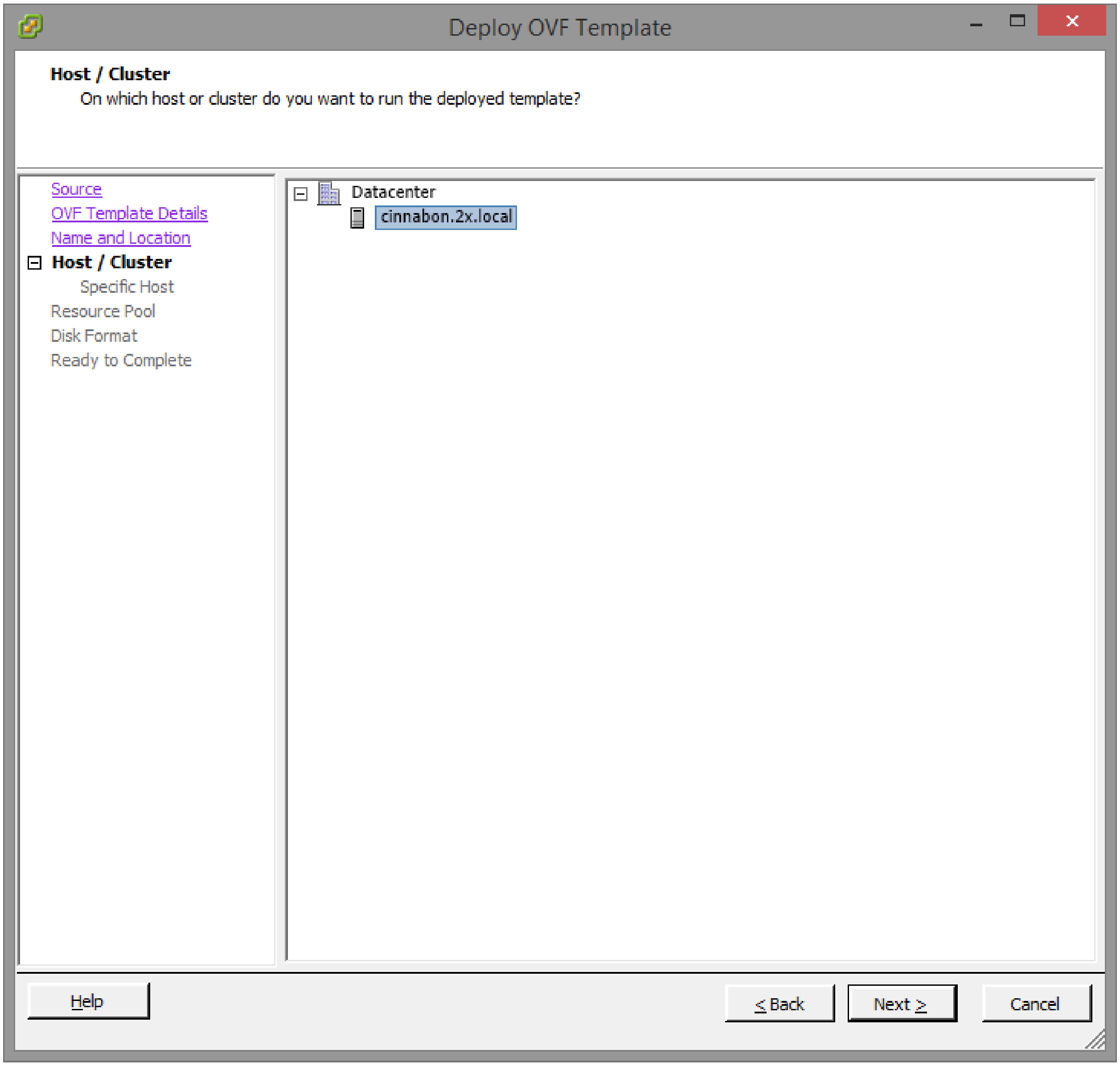
Name: RAS VDI Agent Appliance

The name can contain up to 80 characters and it must be unique within the inventory folder.

Inventory Location:

- vcenter-dev.2x.local
  - Datacenter

6 Choose a name and location for the deployed template and click **Next**.

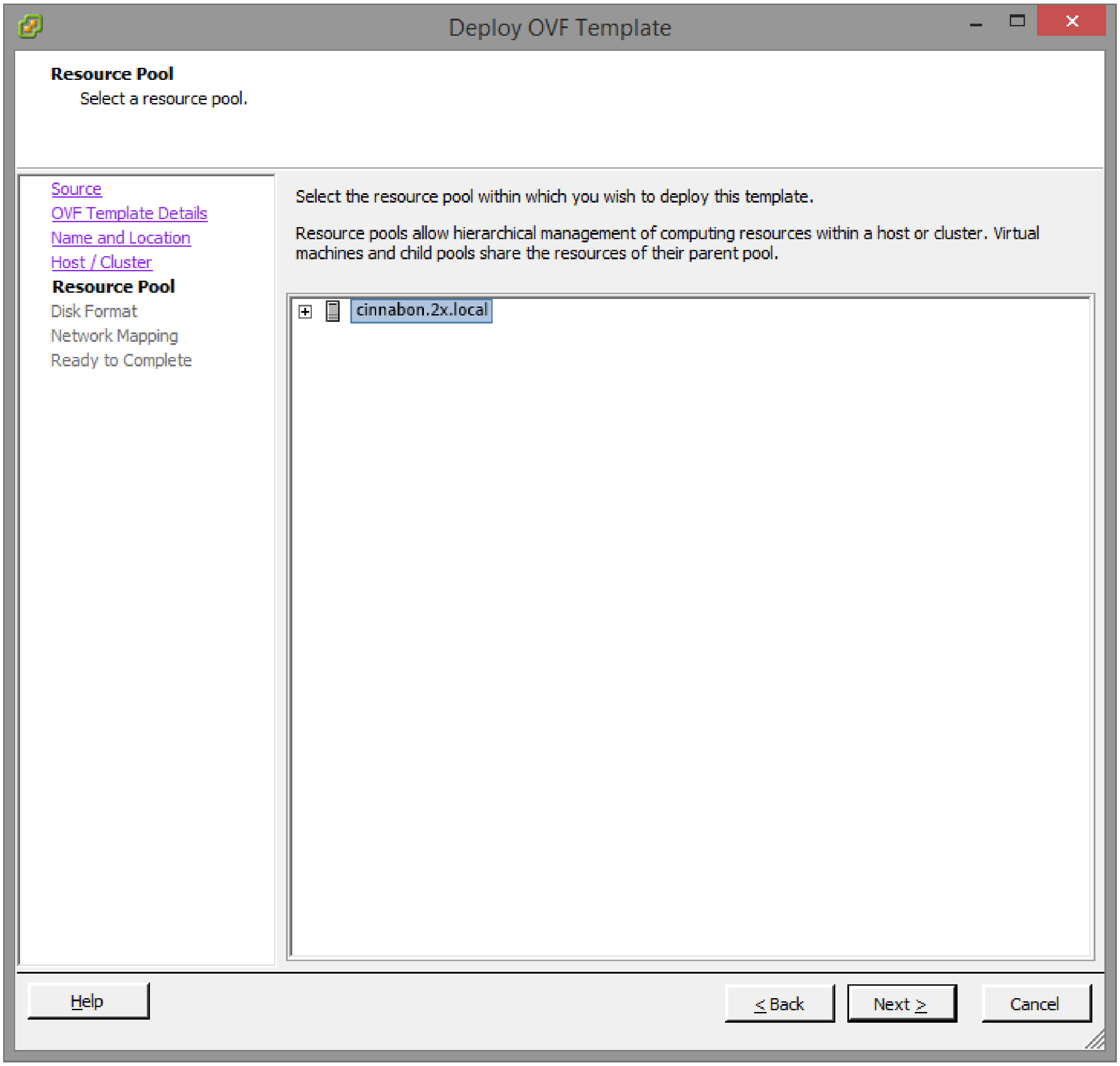


Deploy OVF Template

Host / Cluster

On which host or cluster do you want to run the deployed template?

7 Choose on which host or cluster to deploy the template and click **Next**.



Resource Pool

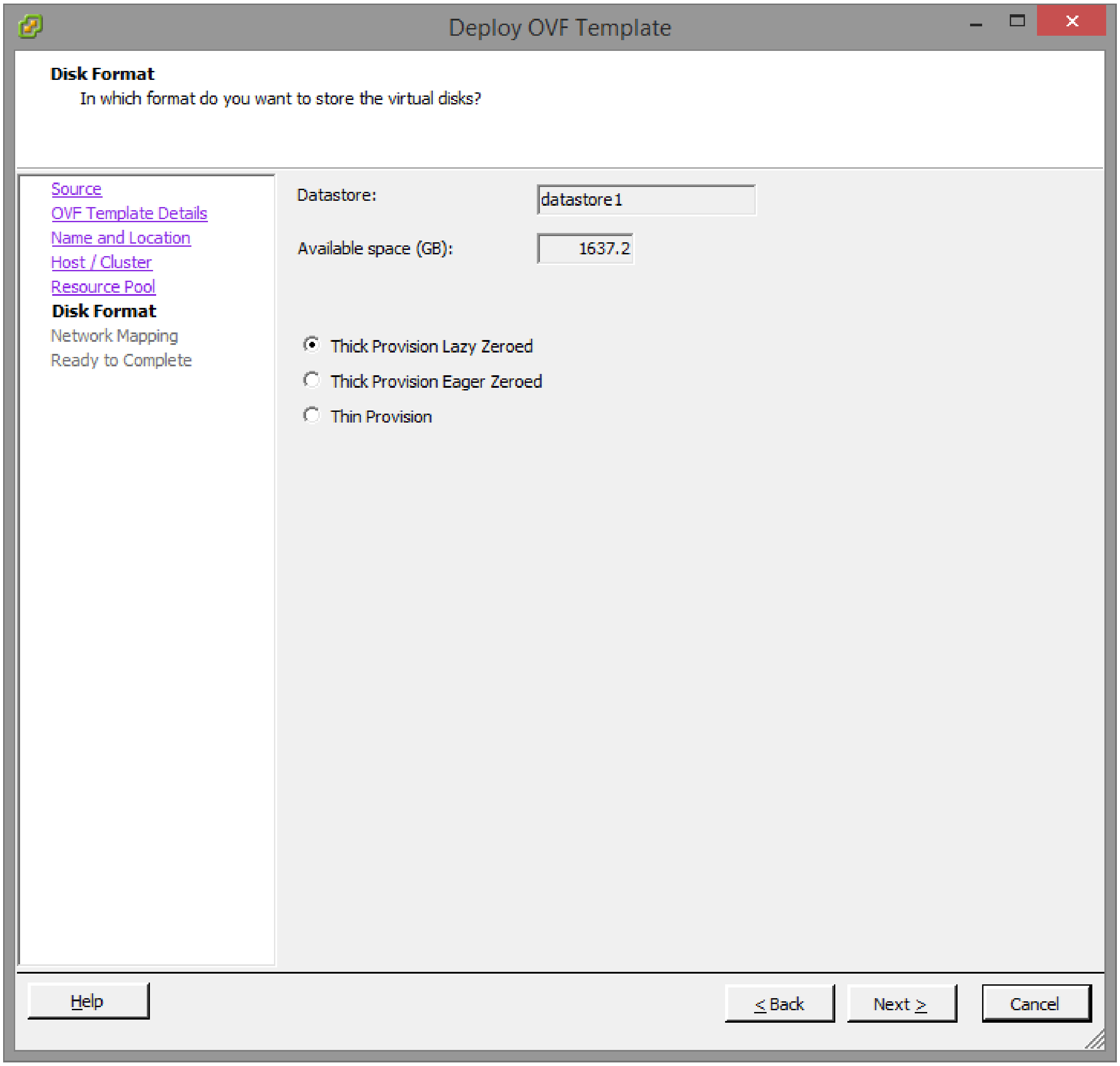
Select a resource pool.

Select the resource pool within which you wish to deploy this template.

Resource pools allow hierarchical management of computing resources within a host or cluster. Virtual machines and child pools share the resources of their parent pool.

cinnabon.2x.local

8 Choose the desired resource pool and click **Next**.



Disk Format

In which format do you want to store the virtual disks?

Datastore: datastore1

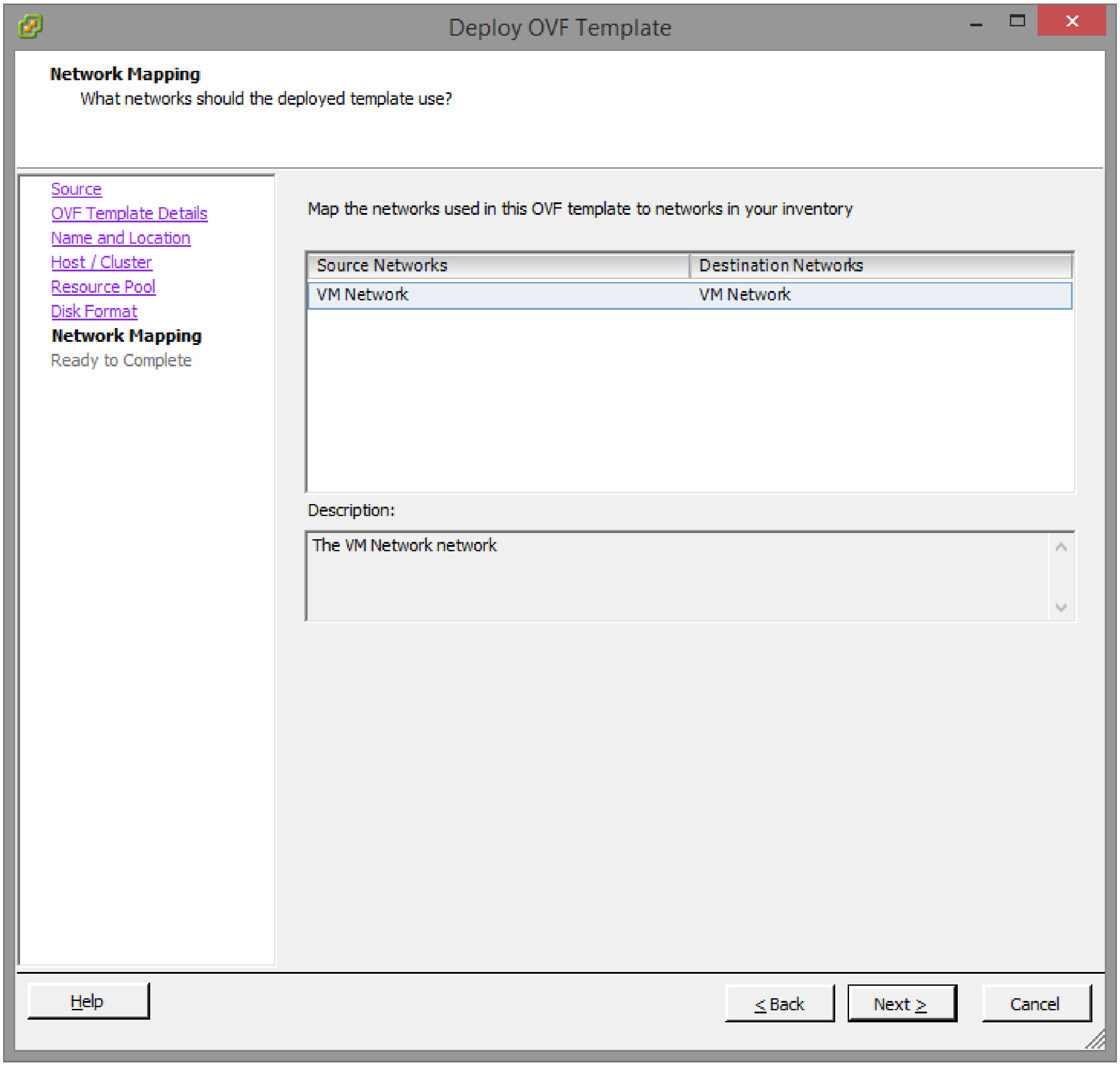
Available space (GB): 1637.2

● Thick Provision Lazy Zeroed

○ Thick Provision Eager Zeroed

○ Thin Provision

9 Choose the desired disk provisioning format and click **Next**.



Deploy OVF Template

Network Mapping

What networks should the deployed template use?

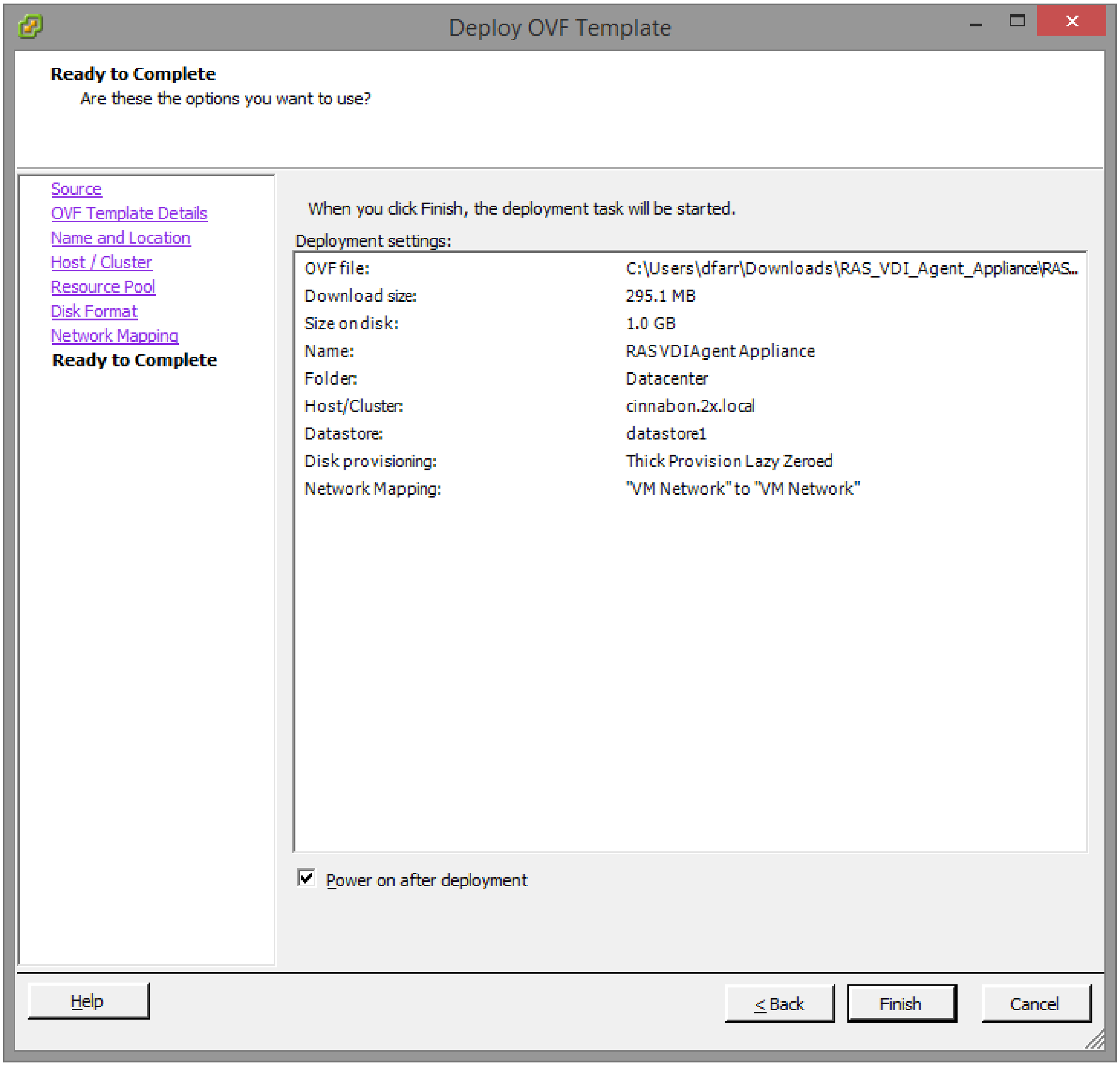
Map the networks used in this OVF template to networks in your inventory

Source Networks	Destination Networks
VM Network	VM Network

Description:

The VM Network network

10 Choose the appropriate VDI network for the appliance and click **Next**.



Ready to Complete

Are these the options you want to use?

When you click Finish, the deployment task will be started.

Deployment settings:

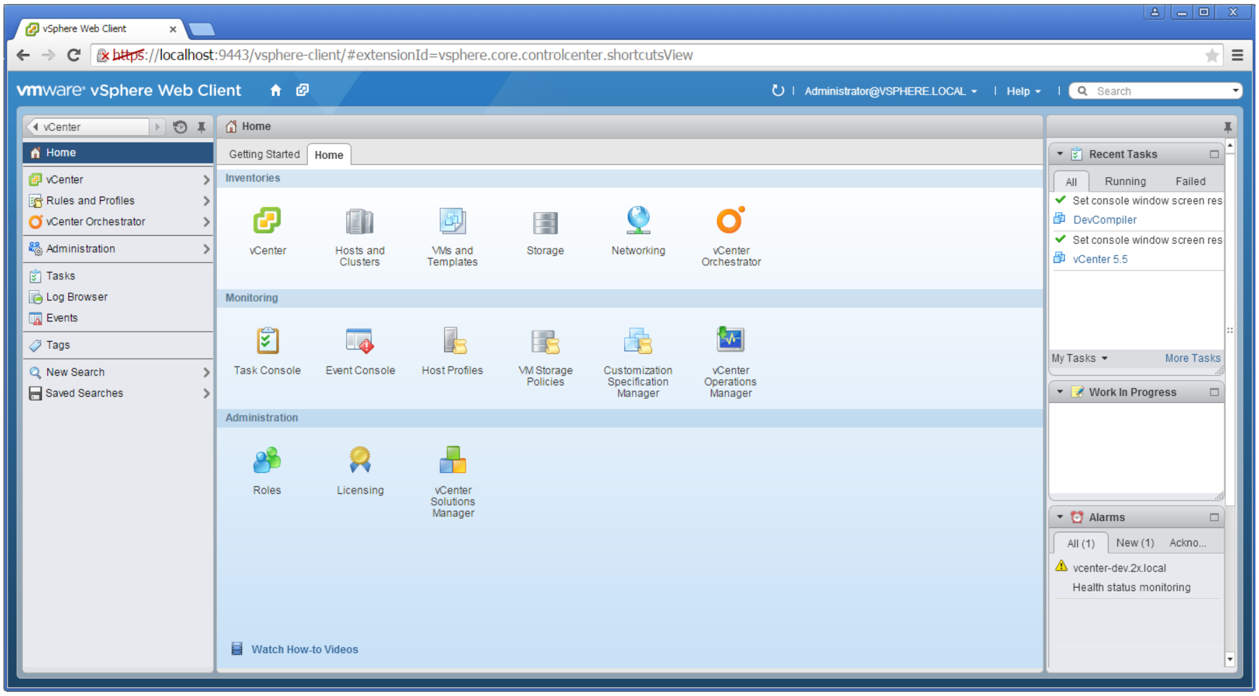
OVF file:	C:\Users\dfarr\Downloads\RAS_VDI_Agent_Appliance\RAS...
Download size:	295.1 MB
Size on disk:	1.0 GB
Name:	RAS VDIAgent Appliance
Folder:	Datacenter
Host/Cluster:	cinnabon.2x.local
Datastore:	datastore1
Disk provisioning:	Thick Provision Lazy Zeroed
Network Mapping:	"VM Network" to "VM Network"

☑ Power on after deployment

11 Select the **Power on after deployment** option.

12 Click **Finish** and wait for the import job to complete.

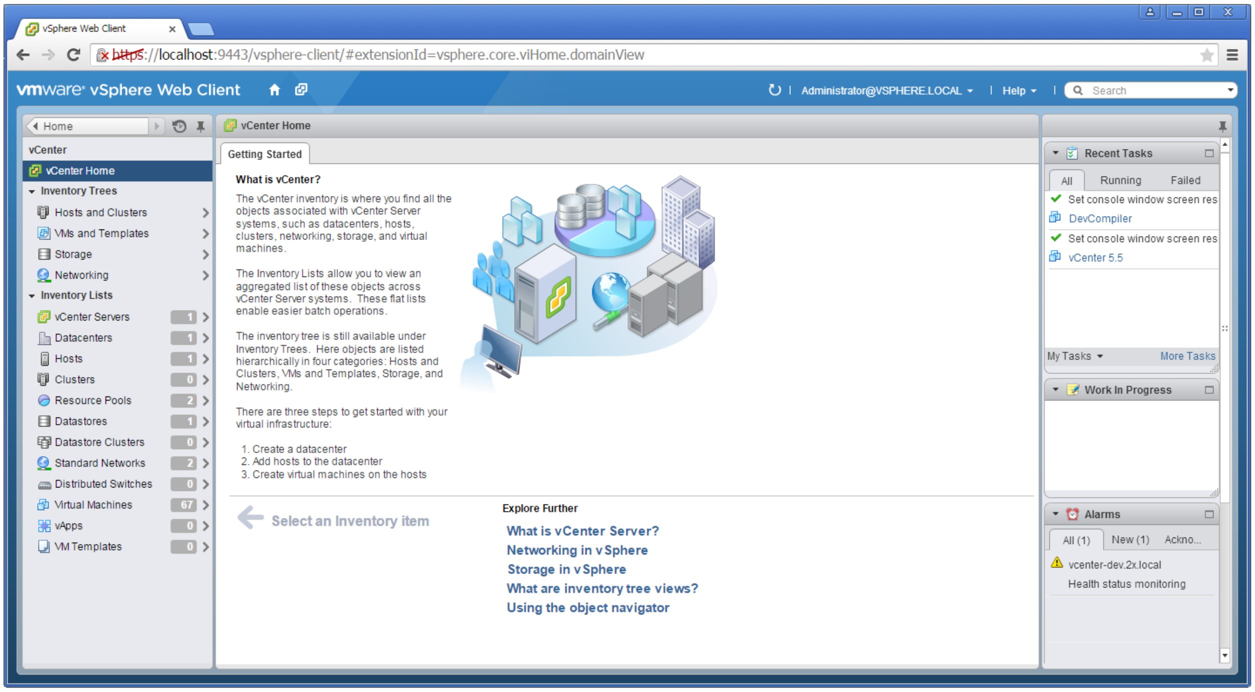
Instructions for the vSphere Web Client:



https://localhost:9443/vsphere-client/#extensionId=vsphere.core.controlcenter.shortcutsView

1 Extract the ZIP file contents into a temporary directory.

2 Login into the vSphere Web client.



https://localhost:9443/vsphere-client/#extensionId=vsphere.core.viHome.domainView

What is vCenter?

The vCenter inventory is where you find all the objects associated with vCenter Server systems, such as datacenters, hosts, clusters, networking, storage, and virtual machines.

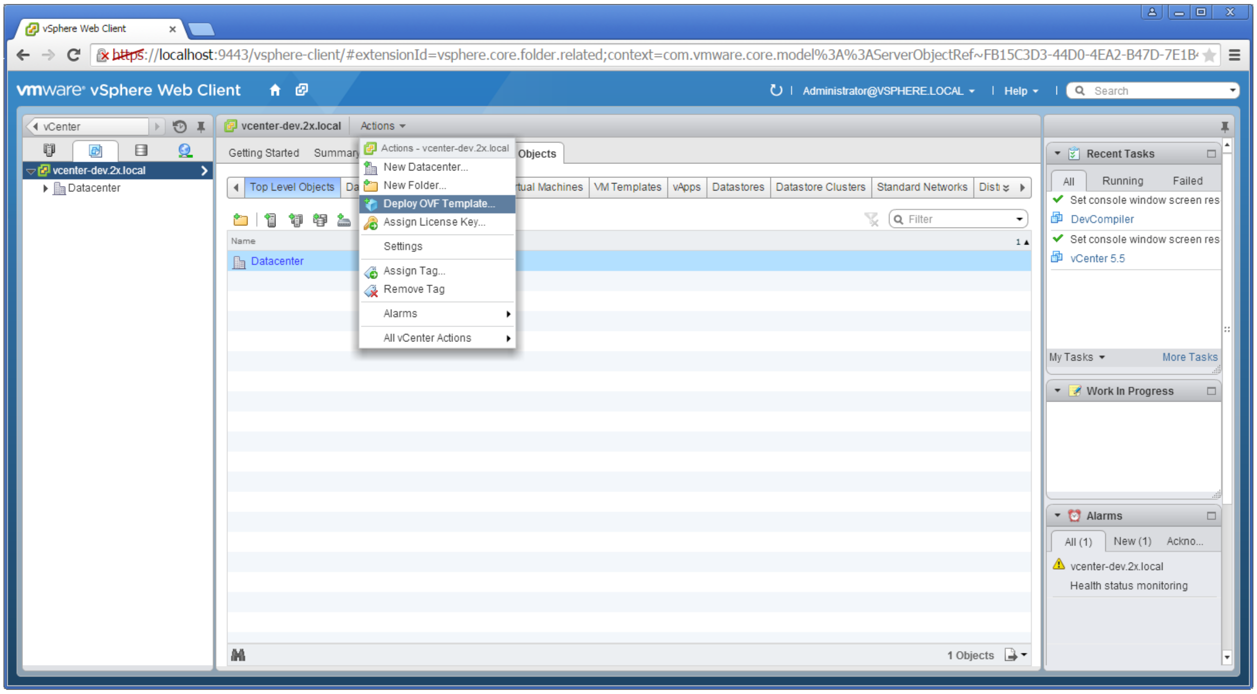
The Inventory Lists allow you to view an aggregated list of these objects across vCenter Server systems. These flat lists enable easier batch operations.

The inventory tree is still available under Inventory Trees. Here objects are listed hierarchically in four categories: Hosts and Clusters, VMs and Templates, Storage, and Networking.

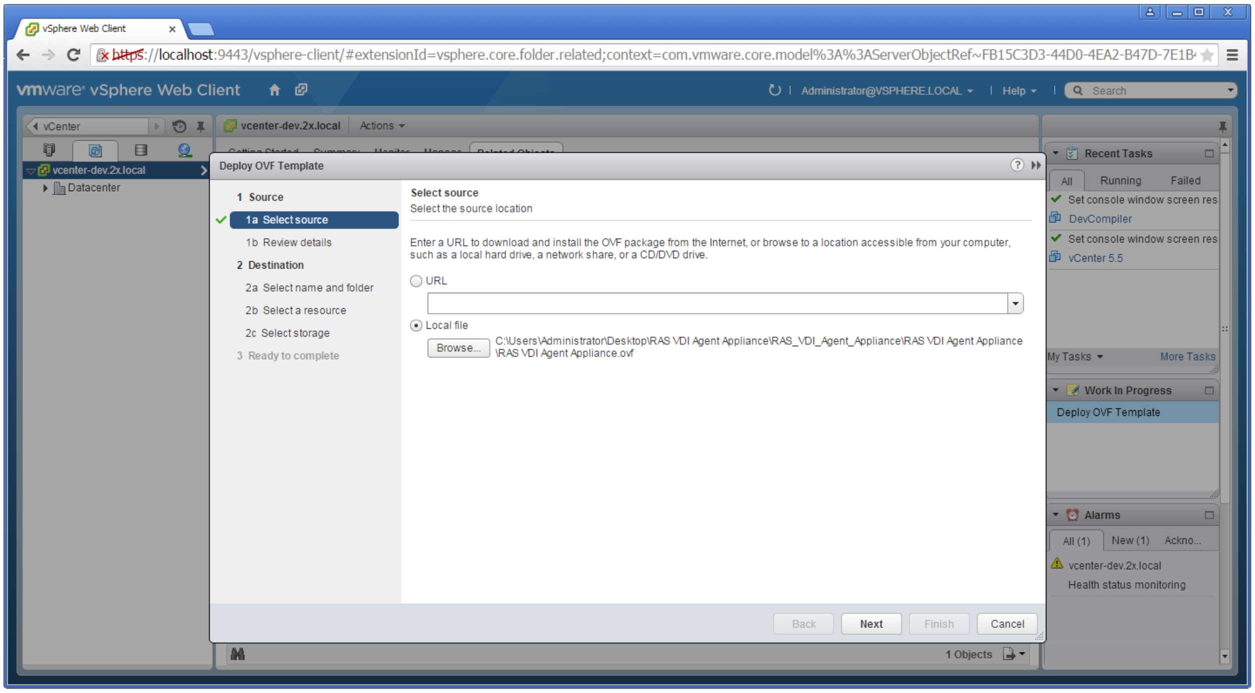
There are three steps to get started with your virtual infrastructure:

1. Create a datacenter
2. Add hosts to the datacenter
3. Create virtual machines on the hosts

3 Navigate to **Home** > **vCenter** > **VMs and Templates**.



4 Choose vCenter host and select **Deploy OVF Template** from the **Actions** menu.



Select source

Select the source location

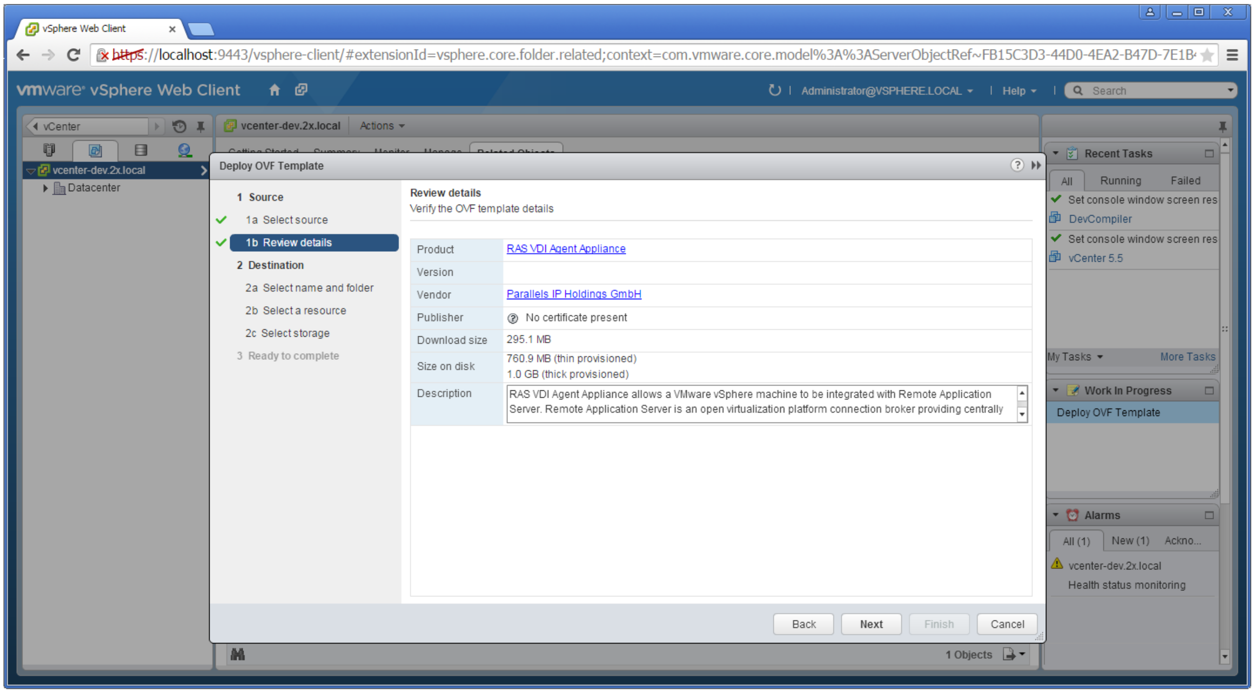
Enter a URL to download and install the OVF package from the Internet, or browse to a location accessible from your computer, such as a local hard drive, a network share, or a CD/DVD drive.

○ URL

● Local file

Browse... C:\Users\Administrator\Desktop\RAS VDI Agent Appliance\RAS_VDI_Agent_Appliance\RAS VDI Agent Appliance\RAS VDI Agent Appliance.ovf

5 Choose **Local file** and browse to the folder where the ZIP file (containing the appliance) was extracted and click **Next**.


vSphere Web Client
https://localhost:9443/vsphere-client/#extensionId=vsphere.core.folder.related;context=com.vmware.core.model%3A%3AServerObjectRef~FB15C3D3-44D0-4EA2-B47D-7E1B
vmware vSphere Web Client
Administrator@VSPHERE.LOCAL
Help
Search
vCenter
vcenter-dev.2x.local
Datacenter
Actions
Recent Tasks
All
Running
Failed
Set console window screen res
DevCompiler
Set console window screen res
vCenter 5.5
My Tasks
More Tasks
Work In Progress
Deploy OVF Template
Alarms
All (1)
New (1)
Ackno...
vcenter-dev.2x.local
Health status monitoring
1 Objects

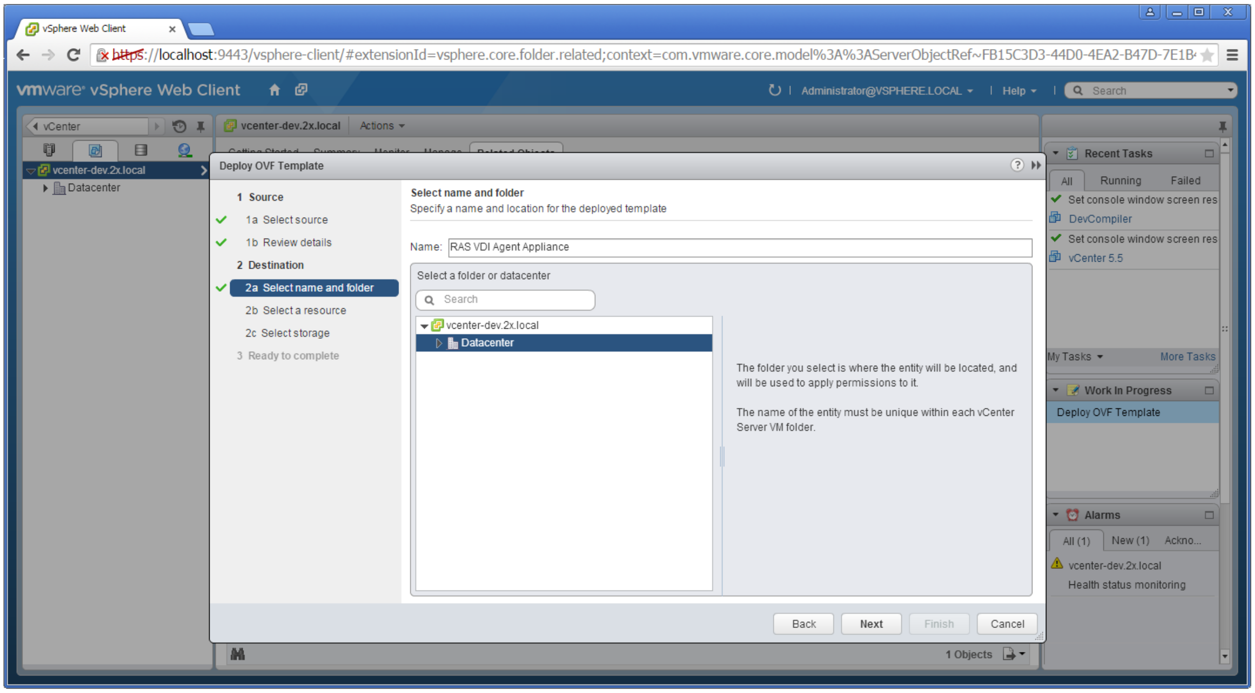
Deploy OVF Template

Review details

Verify the OVF template details

Product	RAS VDI Agent Appliance
Version	
Vendor	Parallels IP Holdings GmbH
Publisher	No certificate present
Download size	295.1 MB
Size on disk	760.9 MB (thin provisioned) 1.0 GB (thick provisioned)
Description	RAS VDI Agent Appliance allows a VMware vSphere machine to be integrated with Remote Application Server. Remote Application Server is an open virtualization platform connection broker providing centrally

6 Review product details and click **Next**.


vSphere Web Client
https://localhost:9443/vsphere-client/#extensionId=vsphere.core.folder.related;context=com.vmware.core.model%3A%3AServerObjectRef~FB15C3D3-44D0-4EA2-B47D-7E1B
vmware vSphere Web Client
Administrator@VSPHERE.LOCAL
Help
Search
vCenter
vcenter-dev.2x.local
Datacenter
Actions
Recent Tasks
All
Running
Failed
Set console window screen res
DevCompiler
Set console window screen res
vCenter 5.5
My Tasks
More Tasks
Work In Progress
Deploy OVF Template
Alarms
All (1)
New (1)
Ackno...
vcenter-dev.2x.local
Health status monitoring
1 Objects

Deploy OVF Template

Select name and folder

Specify a name and location for the deployed template

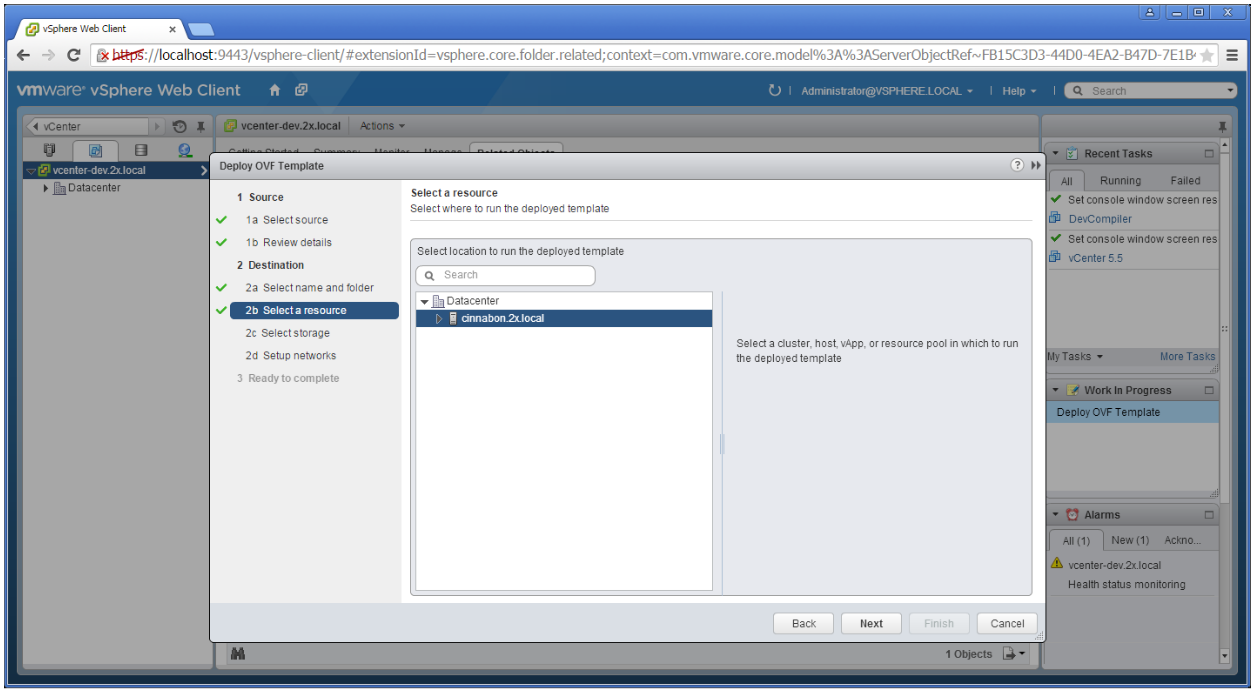
Name: RAS VDI Agent Appliance

Select a folder or datacenter

The folder you select is where the entity will be located, and will be used to apply permissions to it.

The name of the entity must be unique within each vCenter Server VM folder.

7 Choose a name and location for the deployed template and click **Next**.



Select a resource
Select where to run the deployed template

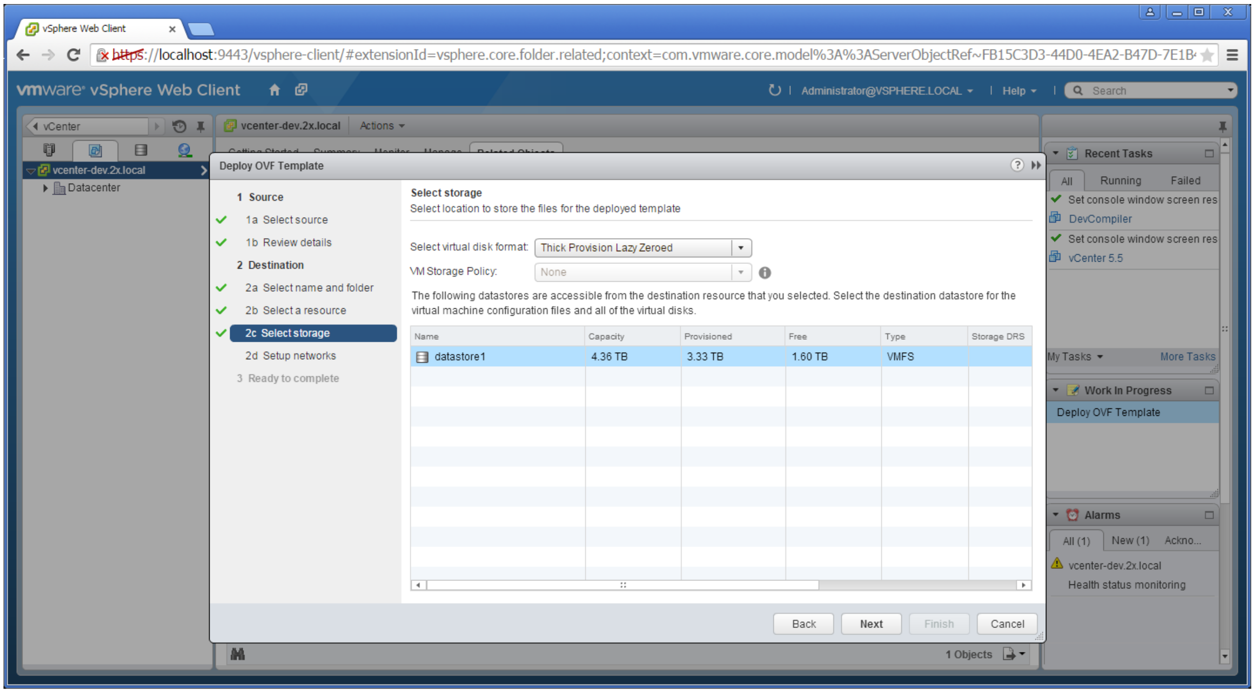
Select location to run the deployed template

Search

Datacenter
cinnabon.2x.local

Select a cluster, host, vApp, or resource pool in which to run the deployed template

8 Choose on which host or cluster to deploy the template and click **Next**.



Select storage
Select location to store the files for the deployed template

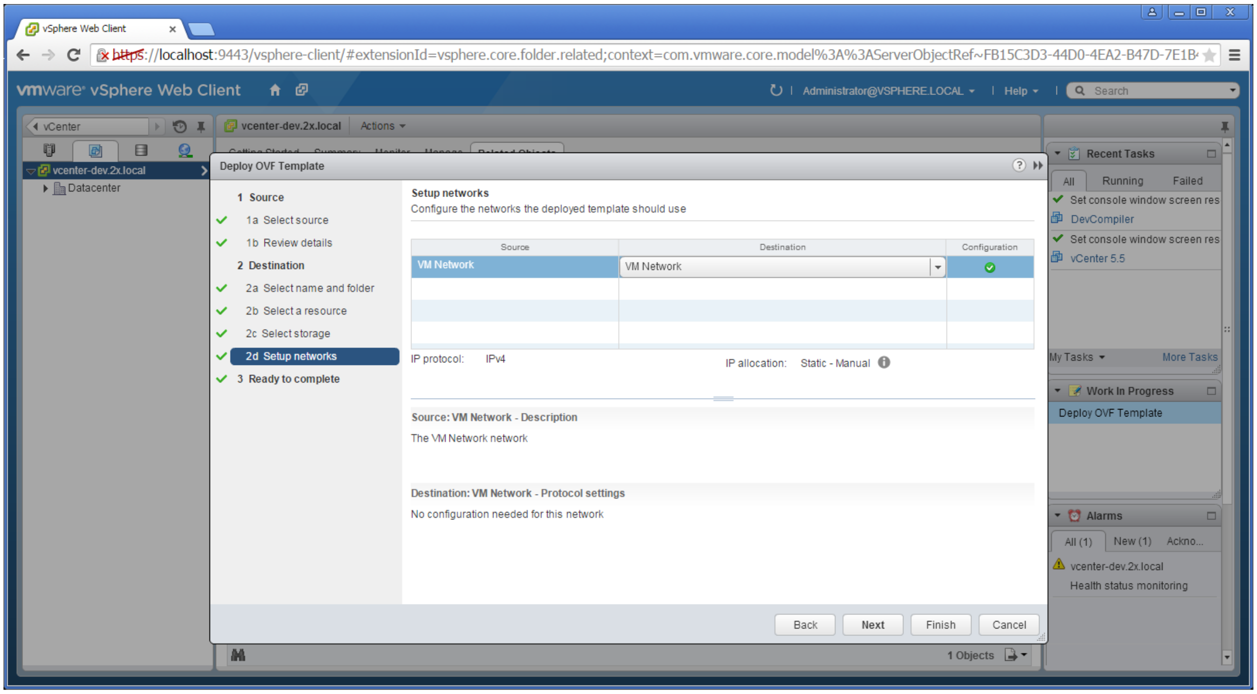
Select virtual disk format: Thick Provision Lazy Zeroed

VM Storage Policy: None

The following datastores are accessible from the destination resource that you selected. Select the destination datastore for the virtual machine configuration files and all of the virtual disks.

Name	Capacity	Provisioned	Free	Type	Storage DRS
datastore1	4.36 TB	3.33 TB	1.60 TB	VMFS	

9 Choose the desired storage settings and click **Next**.



Deploy OVF Template

Setup networks
Configure the networks the deployed template should use

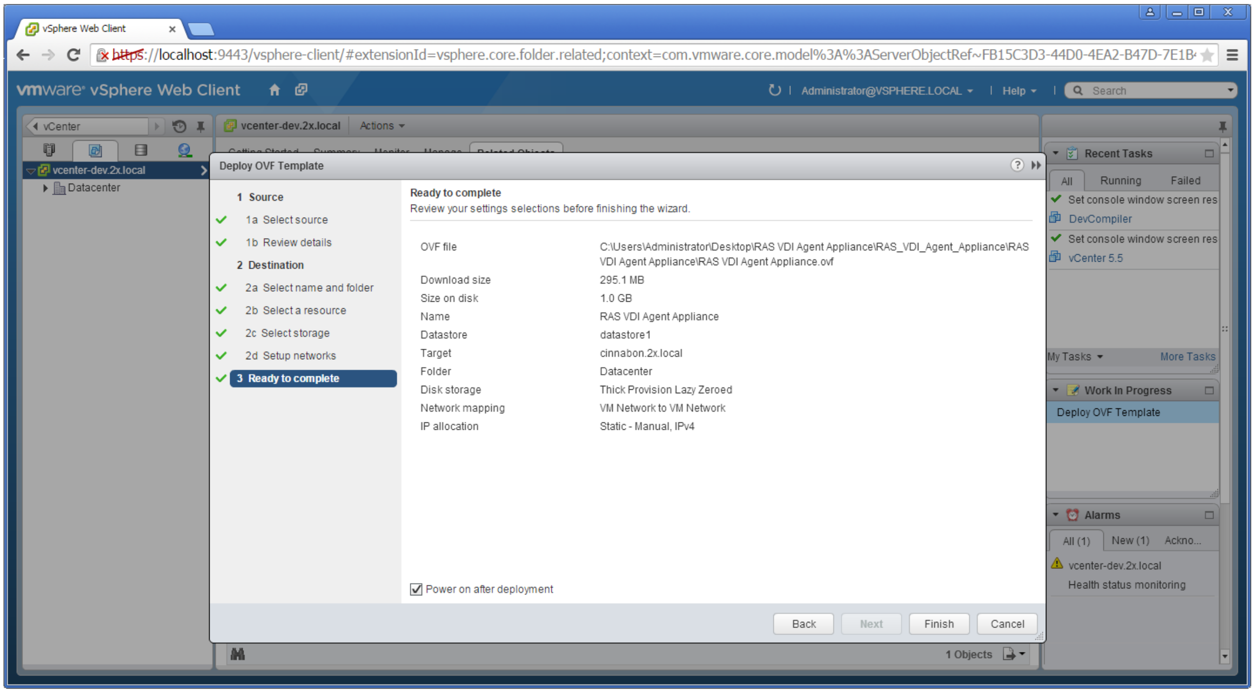
Source	Destination	Configuration
VM Network	VM Network	✓

IP protocol: IPv4 IP allocation: Static - Manual

Source: VM Network - Description
The VM Network network

Destination: VM Network - Protocol settings
No configuration needed for this network

10 Choose the appropriate VDI network for the appliance and click **Next**.



Deploy OVF Template

Ready to complete
Review your settings selections before finishing the wizard.

OVF file	C:\Users\Administrator\Desktop\RAS VDI Agent Appliance\RAS_VDI_Agent_Appliance\RAS VDI Agent Appliance\RAS VDI Agent Appliance.ovf
Download size	295.1 MB
Size on disk	1.0 GB
Name	RAS VDI Agent Appliance
Datastore	datastore1
Target	cinnabon.2x.local
Folder	Datacenter
Disk storage	Thick Provision Lazy Zeroed
Network mapping	VM Network to VM Network
IP allocation	Static - Manual, IPv4

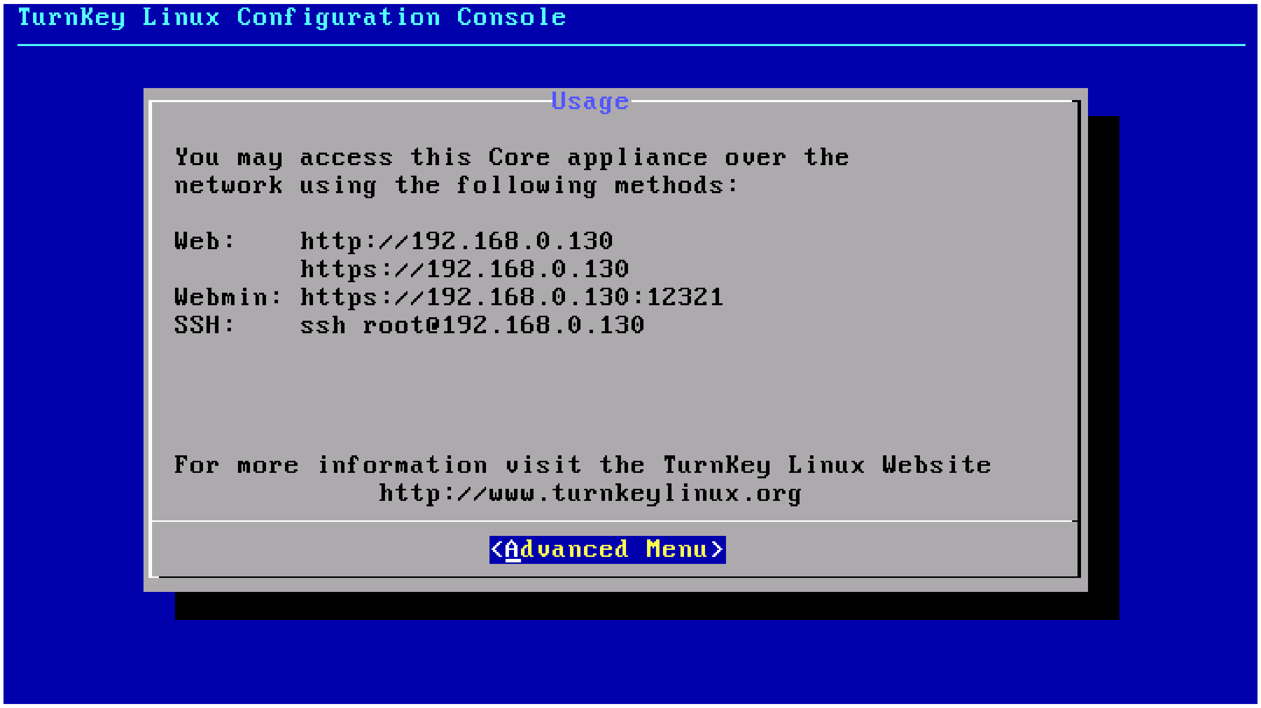
☑ Power on after deployment

11 Select the **Power on after deployment** option.

12 Click **Finish** and wait for the import job to complete.

The network administrator should assign a fixed IP address to the appliance. When using DHCP, take note of the MAC address assigned to the appliance and add a DHCP reservation. If DHCP isn't available, a static IP needs to be configured manually. Network settings can be changed by going to the **Advanced** > **Networking** menu.

Refer to VMware's website for further information on deploying virtual appliances with VMware products.



```
TurnKey Linux Configuration Console

Usage

You may access this Core appliance over the
network using the following methods:

Web:     http://192.168.0.130
         https://192.168.0.130
Webmin:  https://192.168.0.130:12321
SSH:     ssh root@192.168.0.130



For more information visit the TurnKey Linux Website
             http://www.turnkeylinux.org

                  <Advanced Menu>
```

CHAPTER 7

Remote PCs

In addition to Terminal Servers and VDI hosts, resources can also be published from a remote PC running a supported version of Windows. A remote PC can be a physical box or a virtual machine treated as a standalone computer, but typically they are physical computers. If you have virtual machines on your network, it makes sense to use them as part of the VDI infrastructure as was described in the **VDI Hosts** chapter (p. 60). However, if you don't need the guest VM cloning functionality or if your end users require full administrative permissions for customization, you can use a virtual machine as a remote PC. It's up to you.

This chapter describes how to add and configure a remote PC to a site and how to use it to server published resources to your users.

In This Chapter

Adding a Remote PC

Follow the below procedure to add a remote PC to a site:

1. In the RAS Console, select the **Farm** category and click the **Remote PCs** node in the navigational tree.
2. Click **Add** in the **Tasks** drop-down menu to launch the setup wizard.
3. Specify the IP address or FQDN of a remote PC. Click the Get MAC button to obtain the PC's MAC address.
4. Click **Next**.
5. In this step, the Parallels Remote Application Server checks if the RAS PC Agent is installed on the specified PC. If it's not installed, click **Install** to push install the agent on the PC. If the push installation of RAS PC Agent fails (e.g. an SMB share is not available or the firewall rules don't allow to perform it), please read the **Installing RAS PC Agent Manually** section that follows this one.
6. Click **Add** to add the Remote PC to the Parallels Remote Application Server server farm.

Installing RAS PC Agent Manually

You may need to install the RAS PC Agent manually if the automatic push installation cannot be performed. For instance, an SMB share may be not be available or the firewall rules may interfere with the push installation, etc.

Installing the RAS PC Agent Manually

1. Log into the PC where the RAS PC Agent is to be installed using an administrator account and close all other applications.
2. Copy the Parallels Remote Application Server installation file (`RASInstaller.msi`) to the PC and double click it to launch the installation.
3. Once prompted, click **Next** and accept the End-User license agreement.
4. Specify the path where the RAS PC Agent should be installed and click **Next**.
5. Select **Custom** and click **Next**.
6. Click on the **RAS PC Agent** and select **Entire Feature will be installed on local hard drive** from the drop down menu.
7. Ensure that all other components are deselected and click **Next**.
8. Click **Install** to start the installation. Click **Finish** once the installation is finished.

RAS PC Agent does not require any configuration. Once the agent is installed, select the Remote PC name in the Parallels Remote Application Server Console and click **Check Agent**. If the agent is installed properly, the status should change to **Agent Installed**.

Uninstalling RAS Remote PC Agent

To uninstall RAS PC Agent from a server:

1. Navigate to **Start** > **Control Panel** > **Programs** > **Uninstall a Program**.
2. Find **Parallels Remote Application Server** in the list of installed programs.
3. If you don't have any other Parallels RAS components on the server that you want to keep, right-click **Parallels Remote Application Server** and then click **Uninstall**. Follow the instructions to uninstall the program. You may skip the rest of these instructions.
4. If you have other RAS components that you want to keep on the server, right-click **Parallels Remote Application Server** and then click **Change**.
5. Click **Next** on the Welcome page.
6. On the **Change, repair, or remove** page, select **Change**.
7. On the next page, select **Custom**.

8 Select **RAS PC Agent**, then click the drop-down menu in front of it, and click **Entire feature will be unavailable**.

9 Click **Next** and complete the wizard.

Configuring a Remote PC

To access the properties of a Remote PC, highlight the computer in the navigation tree and click **Tasks** > **Properties**. This opens the **Remote PC Properties** dialog.

The Properties Tab Page

By default, a PC is enabled in the farm. When it is disabled, published applications and virtual desktops cannot be served from it. To enable or disable a PC in the farm, select or clear the **Enable Remote PC** option.

If the IP or MAC address of a remote PC has changed, modify them using the **Remote PC** and **MAC Address** input fields.

The **Change Direct Address** option allows you to specify an IP address that Parallels Client can use to connect to the PC directly. This address is only used in the Direct Connection mode and it could be an internal or external IP address.

Note: The Wake On Lan option should be enabled in BIOS so the machine could be automatically turned on. If you are using a virtual machine, the option is usually supported by a hypervisor natively or via a 3rd party software. To test if the Wake On Lan option is turned on, close the **Remote PC Properties** dialog and then click the **Test Wake on LAN** button, which is located below the **Remote PCs** list.

The Agent Settings Tab Page

Each Remote PC in the farm has a RAS Remote PC Agent installed to provide a connection between the Parallels Remote Application Server and the PC. The agent can be configured on the **Agent Settings** tab page.

Use the **Port** field, specify a different remote desktop connection port number.

To increase the connection timeout of a remote PC, select a value from the **Connection Timeout** drop-down list.

To change the amount of time each session remains connected in the background after the user has closed the published application specify a new value in the **Publishing Session Timeout** input field. This option is used to avoid unnecessary reconnections with the PC.

To allow http and mailto links to be opened using a local application on the client computer rather than the server's resources, enable the option **Allow Client URL/Mail Redirection**. To configure a list of URLs which should not be redirected, in the RAS Console, navigate to **Farm** / **Site** / **Settings** and click the **URL Redirection** tab.

Configuring RDP Printing for Remote PC

The **RDP Printer** tab allows you to configure the renaming format of redirected printers. The format may vary depending on which version and language of the server you are using.

Set your RDP Printer Name Format specifically for the configured server by choosing any of the below options from the RDP Printer Name Format drop down menu:

- Printername (from Computername) in Session no.
- Session no. (computername from) Printername
- Printername (redirected Session no)

The other RDP Printing options available in the RDP Printer tab are:

- Remove session number from printer name
- Remove client name from printer name

Publishing from a Remote PC

This section describes how to publish resources hosted by a standalone remote PC. The publishing functionality described here is accessed from the **Publishing** category in the RAS Console.

Read on to learn how to publish resources from a remote PC.

Publishing a Desktop from a Remote PC

To publish a desktop from a terminal server:

1. In the RAS Console, select the **Publishing** category and click the **Add** icon below the **Published Resources** tree. This will launch the publishing wizard.
2. In the first step of the wizard select **Desktop** and click **Next**.
3. On the **Select Desktop Type** page, select **Remote Desktop PC** and click **Next.** The **Remote PC Desktop** page opens.
4. Specify a name, an optional description, and change the icon if needed.
5. Click the **[...]** button next to the **Selected Remote PC** field to specify from which remote PC the desktop should be published. In the box that opens, double-click a PC to select it.

6 Select the desired **Desktop Size** properties.

7 Click **Finish** to publish the desktop.

Publishing an Application from a Remote PC

To publish an application from a remote PC:

1 In the RAS Console, select the **Publishing** category and then click the **Add** icon below the **Published Resources** tree (or right-click inside the **Published Resources** box and click **Add** in the context menu). This will launch the publishing wizard.

2 On the **Select Item Type** wizard page, select **Application** and click **Next**.

3 On the **Select Server Type** page, select **Remote PC** and click **Next**.

4 On the **Select Application Type** page, select **Single Application** and click **Next**. The **Remote PC Application** page opens.

5 Enter a name and an optional description.

6 In the **Run** drop-down menu, specify if the application should run in a normal window, maximized, or minimized.

7 In the **Target** field, specify the application that you want to publish. You may click the **[...]** button to browse for it.

8 In the **Start in** field, specify (or browse for) the "start in" folder. Use Windows environment variables if you are manually entering the path.

9 (Optional) In the **Parameters** input field, specify the parameters to pass to the application when it starts.

10 Click the **[...]** button in the **Remote PC Settings** section to select a remote PC from which the application should be published. In the box that opens, double-click a PC to select it.

11 Select the **Persistent** option to create a persistent guest VM rule the first time the user connects.

12 When done, click **Finish** to publish the application.

Publishing a Web Application from a Remote PC

A web application is like any other application that you can publish using the standard application publishing functionality. However, to simplify publishing of straight URL links to web applications, a separate publishing item type is available that allows you to accomplish this task with minimal number of steps.

To publish a web application:

1 In the RAS Console, select the **Publishing** category and then click the **Add** icon below the **Published Resources** tree (or right-click inside the **Published Resources** box and click **Add** in the context menu). This will launch the publishing wizard.

2 On the **Select Item Type** wizard page, select **Web Application** and click **Next.**

3 On the **Select Server Type** page, select **Remote PC** and click **Next**.

4 On the **Remote PC Web Application** wizard page that opens, specify the web application name, description, window state, and the URL. Select the **Force to use Internet Explorer** option if needed. To browse for a specific application icon, click **Change Icon**.

5 In the **Remote PC Settings** section, click the **[...]** button to select a remote PC.

6 Click **Finish** to publish the application.

Publishing a Network Folder from a Remote PC

You can publishing a filesystem folder via UNC path to open in Windows explorer. To minimize the number of configuration steps, a special publishing item is available that allows you to publish a network folder from a PC.

To publish a network folder:

1 In the RAS Console, select the **Publishing** category and then click the **Add** icon below the **Published Resources** tree (or right-click inside the **Published Resources** box and click **Add** in the context menu). This will launch the publishing wizard.

2 On the **Select Item Type** wizard page, select **Folder on the file system** and click **Next.**

3 On the **Select Server Type** page, select **Remote PC** and click **Next**.

4 On the **Remote PC UNC Folder** wizard page, specify the usual application properties.

5 In the **UNC path** field, enter the UNC path of the folder you wish to publish. Click the **[...]** button to browse for a folder (it may take some time for the **Browse for Folder** dialog to open).

6 In the **Remote PC Settings** section, select the **[...]** button and then select a remote PC from the list.

7 Click **Finish** to publish the folder and close the wizard.

Publishing a Document from a Remote PC

To publish a document from a remote PC clone:

1 In the RAS Console, select the **Publishing** category and then click the **Add** icon below the **Published Resources** tree (or right-click inside the **Published Resources** box and click **Add** in the context menu). This will launch the publishing wizard.

2 On the **Select Item Type** wizard page, select **Document** and click **Next.**

3 Select **Remote PC** and click **Next**.

4. Specify the content type of the document you want to publish. You can select the content type from the predefined list or specify a custom content type in the **Custom content types** input field.
5. Click **Next**.
6. On the **Remote PC Application** page, enter a name, an optional description, a desired window state, and an icon if needed.
7. Use the **[...]** button next to the **Target** input field to browse for the document. All other fields will be automatically populated. To edit any of the auto populated fields, highlight them and enter the required details.
8. (Optional) In the **Parameters** input field, specify the parameters to pass to the application when it starts.
9. Click the **[...]** button in the **Remote PC Settings** sections to browse for a remote PC from which the document should be published. In the box that opens, double-click a PC to select it.
10. Click **Finish** to publish the document.

CHAPTER 8

Managing Published Resources

Publishing is one of the fundamental features of Parallels Remote Application Server. The resources that you can publish include:

- Applications
- Desktops
- Documents
- Web Applications
- Folders
- Network Folders

We've already discussed how to publish resources from various types of servers. You can find this information using the following links:

- **Publishing from a Terminal Server** (p. 50)
- **Publishing from a Guest VM** (p. 75)
- **Publishing from a Remote PC** (p. 109)

In this chapter, we'll discuss advanced management tasks that you can perform on resources that have been already published.

In This Chapter

General Management Tasks

To view published resources, select the **Publishing** category in the Parallels RAS Console. In the middle pane, expand the **Published Resources** node (if it's collapsed) to see the resources.

Right-click a resource to open a context menu. The menu has the following options:

- **Add**. Starts the publishing wizard, which you can use to publish a resource.
- **Find**. Allows you to search the list for a resource by name.
- **Duplicate**. Duplicates a selected resource. You can publish multiple resources of the same type, but configure them differently according to your needs.
- **Disable** or **Enable**. Disables or enables a selected resource. A disabled resource is unavailable to end users.
- **Delete**. Deletes a published resource from the Parallels RAS farm. This only removes the published resource item from the farm. The actual application is not affected. To avoid accidental deletions, a dialog box is displayed asking for your confirmation.
- **Verify Target(s)**. Verifies that the target specified for the selected resource is valid. To see the target, select a resource and then click the **Application** tab page.
- **Convert Filters to Secure Identifiers**. If filtering for a resource is specified using WinNT or LDAP, you can use this option to convert it to SID (Secure Identifier). For more information, see **Using Filtering Rules** (p. 122).

The action items at the bottom of the screen allow you to perform the following actions:

- **Add**. Same action as the **Add** menu item described above.
- **Delete**. Same as the **Delete** menu item described above.
- **Move Up**. Moves a selected published resource item up the list.
- **Move Down**. Moves a selected published resource item down the list.
- **Disable**. Same as the **Disable** menu item described above.
- **Sort**. Sorts resources alphabetically. For this action item to become enabled, you must select the **Published Resources** node (the topmost one) or a published folder containing individual items.
- **Find**. Same as the **Find** menu item described above.

After making any changes to published resources, please don't forget to click the **Apply** button to commit them to the Parallels RAS farm.

Manage Published Applications

Publishing an application

Publishing an application has been discussed earlier in this guide in the following sections:

- **Publishing an Application from a Terminal Server** (p. 53)
- **Publishing an Application from a Virtual Guest VM** (p. 76)
- **Publishing an Application from a Remote PC** (p. 109)

Configuring a published application

When publishing an application using a wizard, you specify multiple application parameters such as name, executable path, etc. You can modify these options after the application has been published.

To modify a published application:

1. In the RAS Console, select the **Publishing** category and then select the application in the **Published Resources** tree.
2. Use the tab pages in the right pane to change the application options as described in the following subsections.

Configuring sites through which a published application is available

By default, a published application is available through all available sites. To restrict access to a specific site or a group of sites, select the desired site(s) in the **Sites** tab. Please note that if you have just one site, the **Sites** tab will be absent.

Configuring from which servers the application is published

You can specify the terminal servers from which an application will be published on the **Publish From** tab page.

Configuring server-specific application settings

The **Application** tab page displays the application-specific settings. This includes the basic application settings (name, description, window state, icon) and the server settings, which include the servers the application was published from, the application path and file name on a server, the start-in folder, and parameters (if any).

Select the **Start automatically when user logs on** option if you want to start an application as soon as a user logs on. This option works on desktop versions of Parallels Client only.

If an application was published from multiple servers, the **Server(s)** drop-down list can be used to select individual servers and see the **Target**, **Start in**, and **Parameters** values for a particular server. By default, when you publish an application, these values apply to all servers an application is published from. It is possible that one (or more) of the servers has the application installed in a different folder, in which case the specified application path will be invalid.

To verify that the specified **Target** and **Start In** values are correct for all servers, click the **Verify Target(s)** button. The **Target Verifier** dialog opens listing each server and the verification status in the **Progress** column.

If the application is installed at a different path on one of the servers, the **Progress** column will indicate an error. In such a case, close the **Target Verifier** dialog and then select the server in the **Server(s)** drop-down list. Specify new values in the **Target**, **Start In,** and (if necessary) **Parameters** fields specific for that server. Click **Apply** to save your changes.

The **Target Verifier** dialog can also be used to verify the targets for all published applications at once. To do so, right-click **Published Resources** (the root node of the **Published Resources** tree) and then click **Verify Target(s)** in the context menu.

This time, the **Target Verifier** dialog will contain all published applications and their verification status.

Configuring shortcut options for a published application

Note: This option is not available on all operating systems.

Click the **Shortcuts** tab to enable the creation of shortcuts on the user's desktop, in the Start folder, and shortcut in the Auto Start folder. When the **Auto Start** shortcut option is selected, the application will be started when the operating system on the client is started.

To use the default settings, select the **Inherit default settings** option. You can view or modify the default settings by clicking the **Edit Defaults** link.

Configuring file extension associations

To modify file extension association for a particular published application, click the **File Extensions** tab.

A list of typically associated file extensions is automatically generated once an application is published. If you would like to modify the preconfigured list and add, remove, or modify an existing entry, select the **Associate File Extensions** option. To add a new extension to the list, click **Add** in the **Tasks** drop-down menu (or click the + icon) and specify the desired extension.

To modify an existing association, highlight the extension and click **Properties** in the **Tasks** drop down menu (or double-click the **Parameters** column) and type the parameter.

Configuring licensing options for published applications

Click the **Licensing** tab to configure the following licensing options:

- **Disable session sharing.** If this option is enabled, it allows you to isolate the published application to one session. Therefore if the same application is launched twice, the two instances of the application will run in two isolated sessions.
- **Allow users to start only one instance of the application.** If this option is enabled, a user can only launch a single instance of the application.

- **Concurrent Licenses.** Use this option to specify the maximum number of concurrent instances the application can run. E.g. if the license of the application allows you to only run 10 instances of the application, set the Concurrent licenses option to 10 so once such limit is reached, other users cannot initiate other instances.
- **If limit is exceeded**. From this drop down menu you can specify what action should the Parallels Remote Application Server take in case any of the above licensing configured limits are exceeded.

To use the default settings, select the **Inherit default settings** option. You can view or modify the default settings by clicking the **Edit Defaults** link.

Configuring display settings for a published application

Click the **Display** tab to configure the color depth of the published application, resolution, width and height. To use the default settings, select the **Inherit default settings** option. You can view or modify the default settings by clicking the **Edit Defaults** link.

Filtering

Filtering is comprehensively described in the **Filtering Rules by User, Client, MAC, and Gateway** section (p. 122).

Manage Published Desktops

Publishing a desktop

Publishing a remote desktop has been discussed earlier in this guide in the following sections:

- **Publishing a Desktop from a Terminal Server** (p. 50)
- **Publishing a Virtual Desktop from a Guest VM** (p. 75)
- **Publishing a Desktop from a Remote PC** (p. 109)

Configuring a published desktop

When publishing a desktop using a wizard, you have to specify the desktop settings, such as display size, etc. You can modify these options after the desktop has been published.

To modify a published desktop, select it in the **Published Resources** tree in the **Publishing** category.

Configuring from which sites a published desktop is available

By default, a published desktop is available through all of the available sites. To restrict access to a specific site or a site group, select a desktop in the **Published Resources** tree and then click the **Sites** tab in the right pane. Select the sites from which the desktop should be available.

Note: For the **Sites** tab to be available, you need more than site in a farm.

Configuring from which terminal servers a desktop is published

When configuring a Terminal Server desktop, you can specify from which servers it should be published. To do so, click the **Publish From** tab and select the desired servers.

Configuring desktop resolution and other properties

Depending on the desktop type, click the **Desktop**, **Remote PC Desktop**, or **Virtual Desktop** tab to configure the desktop name, description, icon, and resolution.

Start automatically when user logs on: Select this option if you want to open a desktop as soon as a user logs in.

Desktop Size: Select a desired desktop size from the drop-down list.

Multi-Monitor: Select whether the multi-monitor should be enabled, disabled, or whether the client settings should be used.

Configuring shortcut options for a published desktop

Click the **Shortcuts** tab to enable the creation of shortcuts on the user desktops, shortcuts in the Start folder, and shortcut in the Auto Start folder. When the Auto Start shortcut is enabled, the application will start when the user's computer is started.

Note: This option is not available on all operating systems.

The filtering tab

Filtering is comprehensively described in the **Filtering Rules by User, Client, MAC, and Gateway** section (p. 122).

Manage Published Documents

Publishing a document

Publishing a document has been discussed earlier in this guide in the following sections:

- **Publishing a Document from a Terminal Server** (p. 59)
- **Publishing a Document from a Remote PC** (p. 111)
- **Publishing a Document from a Guest VM** (p. 78)

Configuring a published document

When publishing a document using a wizard, you have to specify the document settings. These options can be modified after the document has been published.

To modify a published document, select it in the **Published Resources** tree in the **Publishing** category and then use the tab pages in the right pane to configure the published document settings.

Configuring from which sites a published document is available

By default, a published document is available through all available sites. To restrict access to a specific site or a site group, click the **Sites** tab in the right pane. Select the sites from which the document should be available.

Note: For the **Sites** tab to be available, you need more than one site in a farm.

Configuring from which servers a document is published

Click the **Publish From** tab and select the servers from which the document should be published. Please note that a server must have the application installed that can open this particular document type.

Configuring server-specific document settings

By default, the settings configured in the **Target** (application path), **Start In**, and **Parameters** fields apply to all servers a document is published from. If a document exists in a different folder on one (or more) of the servers, you can specify the above settings for a specific server or servers individually.

To do so:

1. Click the **Application** tab and.

2 Select a server in the **Server(s)** list.

3 Specify the **Target**, **Start In**, and **Parameters** (optional) properties. The values that you specify will apply to the selected server only. Repeat the steps for other servers if needed.

4 Click the **Verify Target(s)** button to verify the document path on all servers from which this application is published. The results are displayed in the **Target Verifier** dialog where you can see whether the target is correct or not for each server.

Configuring shortcut options for a published document

Click the **Shortcuts** tab to enable the creation of shortcuts on the user desktops, shortcuts in the **Start** folder and shortcut in the **Auto Start** folder. When the **Auto Start** shortcut is enabled, the application will start when the user's computer is started.

Note: This option is not available on all operating systems.

Configuring file extension associations

To modify file extension association for a particular published document, click the **File Extensions** tab.

Note: A list of typically associated file extensions is automatically generated once a document is published. If you would like to modify the preconfigured list, click the **Associate File Extensions** option.

To add a new extension to the list, click **Tasks** > **Add** and specify the extension

To modify the extension's parameters, highlight the extension and click **Tasks** > **Properties**.

Configuring licensing options for published documents

Click the **Licensing** tab to configure any of the below licensing options:

Select the **Inherit default settings** option to use the defaults. To specify your own settings, clear the option and set the following options:

- **Disable session sharing**. If this option is enabled, it allows you to isolate the published application to one session. Therefore if the same application is launched twice, the multiple instances of the application will run in the same isolated session.
- **Allow users to start only one instance of the application**. If this option is enabled, a user can only launch a single instance of the application.
- **Concurrent Licenses**. Use this option to specify the maximum number of concurrent instances the application can run. E.g. if the license of the application allows you to only run 10 instances of the application, set the Concurrent licenses option to 10 so once such limit is reached, other users cannot initiate other instances.

- **If limit is exceeded**. From this drop down menu you can specify what action should the Parallels Remote Application Server take in case any of the above licensing configured limits has been exceeded.

Configuring display settings for a published document

Click the **Display** tab to configure the color depth of the published document, resolution, width and height. If these options are left at their default values, the client-specified options will take over.

You can also enable the option to wait for the Universal Printers to be redirected before the application is loaded. When enabling this option, you can also configure the maximum wait time (in seconds) for the Universal Printers to be redirected.

Filtering

Filtering is comprehensively described in the **Filtering Rules by User, Client, IP, MAC and Gateway** section (p. 122).

Manage Published Folders

Published folders are used to organize published resources and to facilitate filtering options. Published folders appear on the client side just like any other published resource, so you can use them to build a published resource hierarchy on the client's launchpad. Filtering options can be configured for a specific folder. When that's done, the published resources contained in the folder inherit those options. For more information about filtering, please see **Using Filtering Rules** (p. 122).

To publish a folder:

1. In the RAS Console, select the **Publishing** category and then click the **Add** icon below the **Published Resources** tree. This will launch the publishing wizard.
2. On the first page, select **Folder** and click **Next**.
3. Specify a folder name, an optional description, and change the icon if desired.
4. Click **Finish** to publish the folder.

Managing published folders

To modify an existing published folder, select it in the **Published Resources** tree. Use the tab pages in the right pane to specify the folder properties as follows:

- The **Information tab** page displays the folder information (read-only).
- The **Sites** tab page specifies through which sites the published folder is available.
- The **Folder** tab page specifies the folder name and description.

- The **Filtering** tab page specifies the filtering options. The filtering options will be inherited by all other published resources in that folder.

Adding published resources to a folder

To add a published resource to a folder, select the published resource in the **Published Resources** tree and drag to the folder.

Using Filtering Rules

Filtering is a feature that allows you to control who can access a particular published resource. You can define filtering rules based on any of the following:

- User
- Client (managed client)
- IP address
- MAC address
- Gateway

By default, no filtering rules exist for a published resource, therefore the resource is available to anyone who is connected to a Parallels RAS farm. Once you specify a filtering rule for a published resource, only those users/computers who satisfy the criteria will be able to use it.

To create a filtering rule, select a published resource in the **Published Resources** tree and click the **Filtering** tab. In the **Select Filtering Type** drop-down list, select a criteria and then define a filtering rule as described below.

Filtering by User

To allow individual users or a user group to access the published resource:

1. Select **User** in the **Search Filtering Type** drop down list.
2. Select the **Allow the following Users** option.
3. Click **Tasks** > **Add** and specify a user or a group in the **Select Users** dialog. Click **OK** to add a user/group to the list on the **Filtering** tab page.
4. In the **Default Object Type** drop-down list, select whether this rule will applies to users, groups, or both.
5. In the **Browse Mode** drop-down list, select the browsing mode you would like to use to connect to Active Directory or Windows.

   The options are:

   - **WinNT**. WinNT is faster than LDAP but does not support group nesting. Used only for backward compatibility.

- **LDAP.** LDAP supports group nesting but is slow. Used only for backward compatibility.
- **Secure Identifier**. This is the preferred and fastest method. It supports group nesting and renaming.

To convert users or groups specified using WinNT or LDAP, select a user entry and then click **Tasks** > **Convert**.

Filtering by Client

To allow a specific client or a list or clients to access the published resource, follow these steps:

1. Select **Client** in the **Search Filtering Type** drop-down list.
2. Select the **Allow the following Clients** option. You can use the asterisk character (*) as a wildcard in a name. To include a wildcard in a name, select a client in the list and then click **Tasks** > **Edit**.
3. Click **Tasks** and choose one of the following:
   - **Add from network browse**. Opens a dialog where you can select a client from the list populated from the network.
   - **Add from Active Directory**. Opens a dialog where you can specify a computer or search the Active Directory for it.
   - **Add from known devices**. Opens a dialog where you can select a client from the list populated by previously connected clients.
   - **Edit**. Allows you to modify the name of a selected client. If you want to include a wildcard (*) in a name, you can do it using this option. If no client is selected in the list, the option is disabled.
   - **Delete**. Allows you to delete a selected client. If no client is selected in the list, the option is disabled.
4. Click **OK** to add your selection to the **Client** list.

Filtering by IP Address

To allow a specific IP address (or multiple addresses) or a range of IP addresses to access the published resource, follow these steps:

1. In the **Search Filtering Type** drop-down list, select **IP Address**.
2. Select the **Allow the following IPs** option.
3. Click **Tasks** > **Add** in the IPv4 and/or IPv6 sections to specify the IP address or a range of IP addresses and click **OK**.

Filtering by MAC Address

To allow a MAC address or a specific list of MAC addresses to access the published resource, follow these steps:

1 In the **Select Filtering Type** drop-down list, select **MAC**.

2 Select the **Allow the following MACs** option.

3 Click **Tasks** > **Add** to select the MAC address(es) and click **OK**.

Filtering by Gateway

To allow users to connect to a published resource through a specific gateway, follow these steps:

1 Select the **Gateway** filtering type.

2 Select the **Allow connections from the following gateway** option.

3 Click **Tasks** > **Add** to specify the gateway and its IP address (if it has multiple IP addresses).

Configuring multiple filtering rules

If multiple filtering rules are configured for a specific published resource, the connecting user has to match ALL of them to be allowed access to the published resource.

Setting Icon Resolution

Published resources are displayed in Parallels Client as icons or as a list. You can specify which resolution should be used when the resources are displayed as icons.

To specify the icon resolution, navigate to **Farm** / **Site** / **Settings** > **Client Settings** (tab page) and then select one of the following options:

- **Send standard resolution icons**. Standard resolution icons will be displayed.
- **Send high resolution icons**. High resolution icons. Please note that this option will use more network bandwidth.

CHAPTER 9

RAS Secure Client Gateways

RAS Secure Client Gateway tunnels all Parallels Remote Application Server data on a single port. It also provides secure connections and is the user connection point to Parallels Remote Application Server. At least one RAS Secure Client Gateway must be installed and configured in every site. Multiple gateways can exist depending on your requirements. Read this chapter to learn how to add, configure, and manage RAS Secure Client Gateways.

In This Chapter

RAS Secure Client Gateway Overview

By default, a RAS Secure Client Gateway is installed on the same server where Parallels Remote Application Server is installed. You can add additional RAS Secure Client Gateways to a site to support more users, load balance connections, and provide redundancy.

To manage RAS Secure Client Gateways, in the RAS Console, navigate to **Farm** / **Site** / **Gateways**. Use the tab pages in the left pane to manage **Gateways** and **Tunneling Policies**.

How a RAS Secure Client Gateway Works

The following describes how a RAS Secure Client Gateway handles user connection requests:

1 The RAS Secure Client Gateway receives a user connection request.

2 It then forwards the request to all of the available RAS Publishing Agents in the farm.

3 A RAS Publishing Agent performs Load Balancing checks and an Active Directory security lookup to obtain security permissions.

4 If the user requesting a published resource is granted access, the RAS Publishing Agent returns the response to the gateway service including details about which terminal server the user can connect to.

5 Depending on the connection mode, the client either connects through the gateway or disconnects from it and then connects directly to the RDS Server.

RAS Secure Client Gateway Operation Modes

A RAS Secure Client Gateway can operate in one of the following modes:

- **Normal Mode.** A RAS Secure Client Gateway in normal mode receives a user connection requests and checks with the RAS Publishing Agent if the user making the request is allowed access. Normal gateways can be used to support a larger number of requests and to improve redundancy.
- **Forward Mode**. A RAS Secure Client Gateway in forwarding mode forwards all the user connection requests to a preconfigured gateway. Gateways in forward mode are useful if cascading firewalls are in use, to separate WAN connections from LAN connections and make it possible to disconnect WAN segments in the event of issues without disrupting the LAN.

Note: Multiple RAS Secure Client Gateways are needed to configure a gateway to use the forward mode.

Adding a RAS Secure Client Gateway

To add a RAS Secure Client Gateway to a site, follow these steps:

1 In the RAS Console, navigate to **Farm** / **Site** / **Gateways**.

2 With the **Gateways** tab selected in the right pane, click **Tasks** > **Add** to start the **Add RAS Secure Client Gateway** wizard.

3 Enter the server FQDN or IP (or click the **[...]** button to select a server from the list).

4 Select the gateway mode from the **Mode** drop down menu.

5 If you selected the **Forwarding** mode in the step above, select the destination gateway in the **Forward To** drop-down list.

6 Select the **Add an SSL certificate and enable HTML5 Gateway** option to automatically create a self-signed certificate, enable SSL, and enable HTML5 support. For more info, please see **Enable HTML5 Support on the Gateway** (p. 135).

7 Select the **Add Firewall Rules** to automatically configure the firewall on the server hosting the gateway.

8 Click **Next**.

9 On the next page, click **Install** to start the RAS Secure Client Gateway installation.

10 Click **Done** when the installation is finished.

Manually Adding a RAS Secure Client Gateway

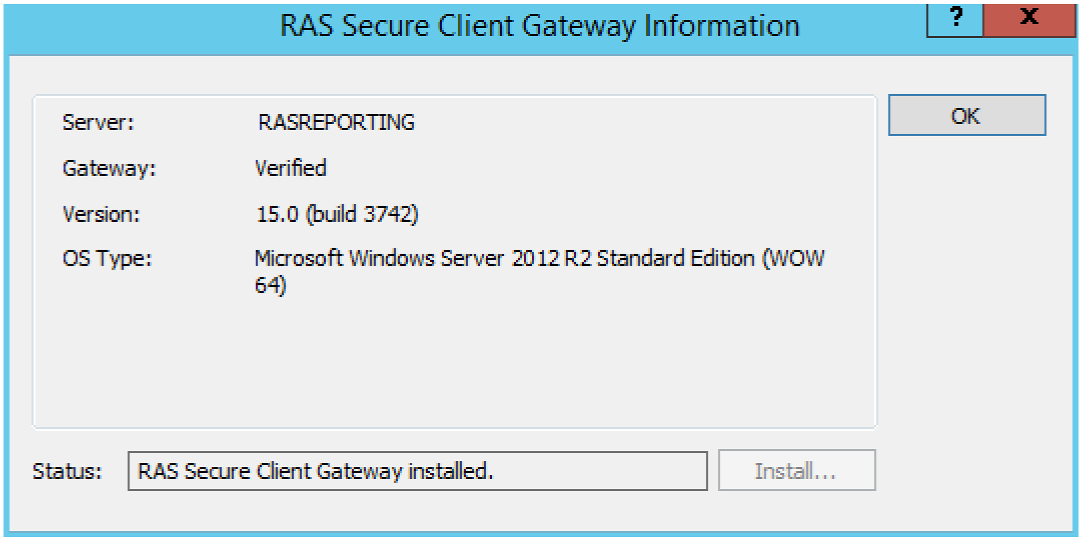
The previous section described how to add a RAS Secure Client Gateway to a site from the RAS Console. You can also install a RAS Secure Client Gateway on a desired server using the Parallels RAS installer and then assign a RAS Publishing Agent to it in the RAS Console.

To manually install a RAS Secure Client Gateway and add it to the farm, follow these steps:

1. Log into the server where you'll be installing the RAS Secure Client Gateway using an administrator account.
2. Copy the Parallels Remote Application Server installation file (`RASInstaller.msi`) to the server and double click it to launch the installation wizard.
3. Once prompted, click **Next** and accept the End-User license agreement.
4. Select the path where the RAS Secure Client Gateway should be installed and click **Next**.
5. Select **Custom** from the installation type screen and click **Next**.
6. Click on **RAS SecureClientGateway** in the feature tree and select **Entire Feature will be installed on local hard drive**.
7. Ensure that all other components in the selection tree are cleared and click **Next**.
8. Click **Install** to start the installation.
9. When the installation is completed, click **Finish** to close the wizard.
10. Open the RAS Console and specify the RAS Publishing Agent that will manage the gateway.

Checking the RAS Secure Client Gateway Status

To check the status of a RAS Secure Client Gateway, right-click it and then click **Check Status** in the context menu. The **RAS Secure Client Gateway Information** dialog opens.



Server: RASREPORTING

Gateway: Verified

Version: 15.0 (build 3742)

OS Type: Microsoft Windows Server 2012 R2 Standard Edition (WOW 64)

Status: RAS Secure Client Gateway installed.

The dialog displays the gateway information, including:

- The name of server on which the gateway resides.
- The verification status.
- Version number. The version number must match the Parallels Remote Application Server version number.
- The operating system type that the host server is running.

The **Status** filed display the current RAS Secure Client Gateway status. If the status indicates a problem (e.g. the gateway did not reply or the version of the gateway is wrong), click the **Install** button to push install the gateway on the server. Wait for the installation to complete and verify the status again.

Configuring RAS Secure Client Gateway

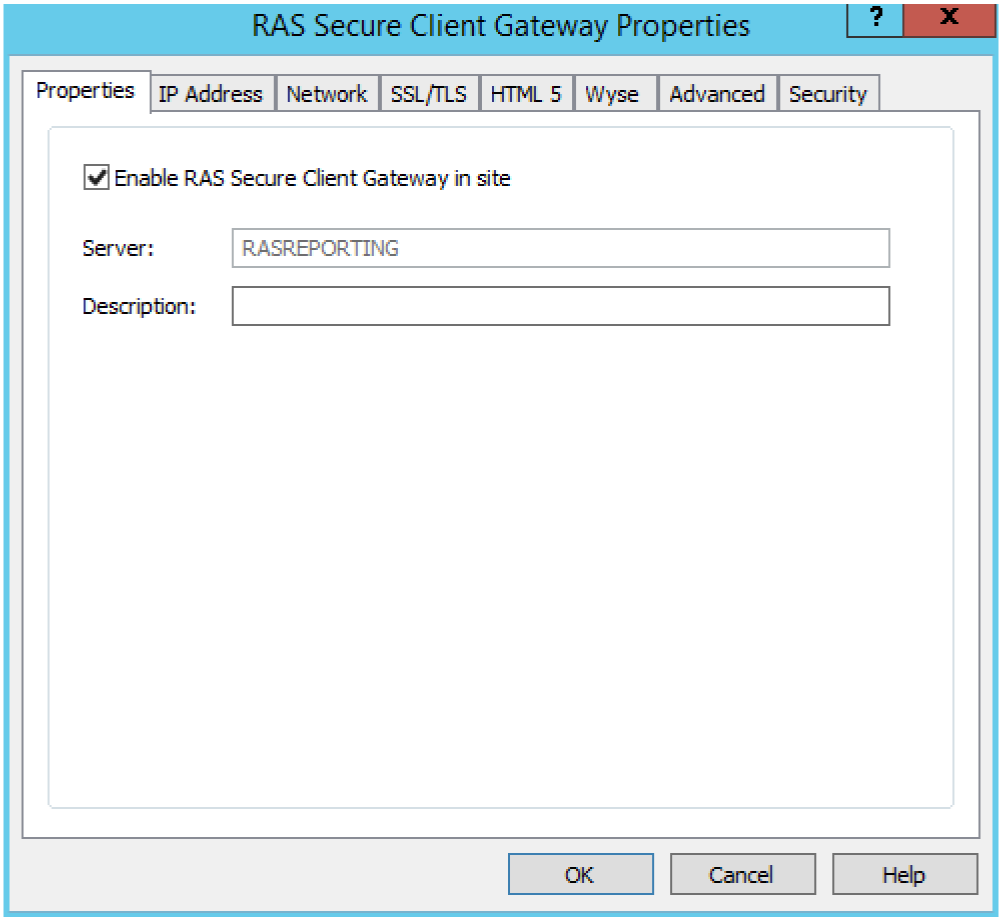
To configure a RAS Secure Client Gateway:

1. In the RAS console, navigate to **Farm** / **Site** / **Gateways**.
2. In the right pane, right-click a gateway and click **Properties**.
3. The **RAS Secure Client Gateway Properties** dialog opens.

Read on to learn how to configure the RAS Secure Client Gateway properties.

Enable and Disable a Gateway

A RAS Secure Client Gateway is enabled by default. To disable a gateway, clear the **Enable RAS Secure Client Gateway in site** option.



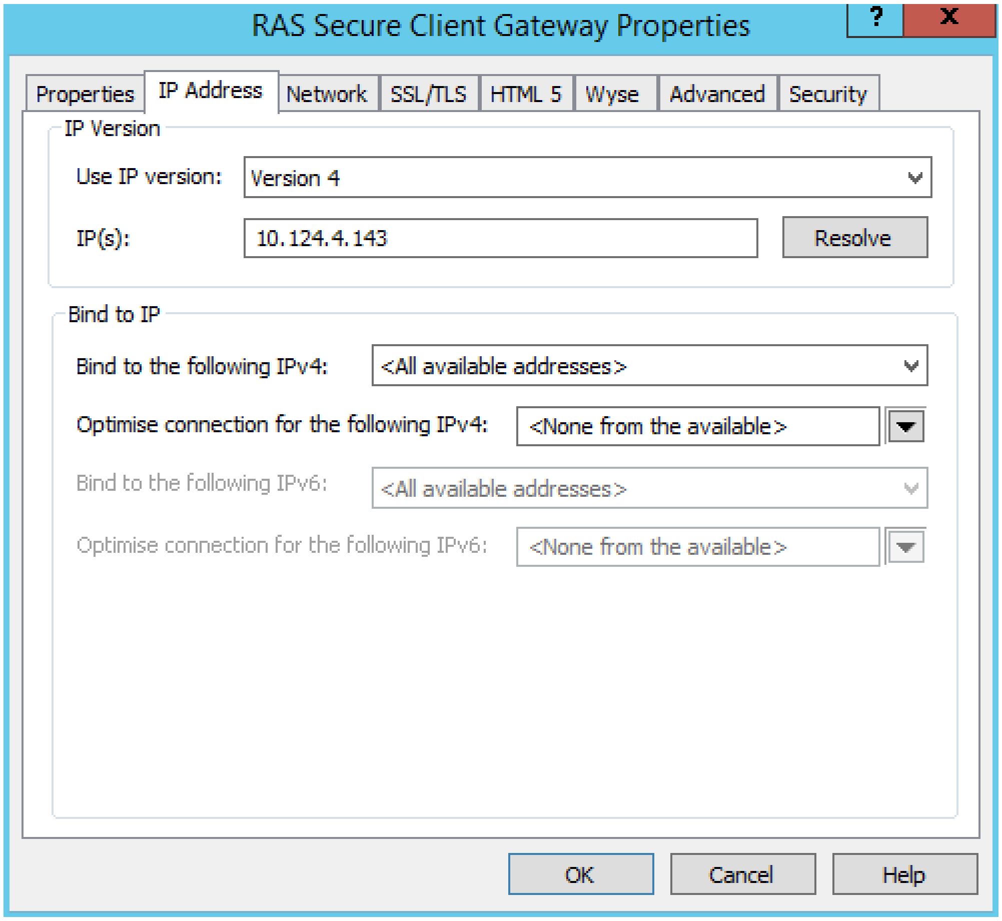
☑ Enable RAS Secure Client Gateway in site

Server: RASREPORTING

Description:

Set IP Address for Incoming Connections

Click the **IP Address** tab page to set the IP address options for incoming client connections.



RAS Secure Client Gateway Properties

IP Version

Use IP version: Version 4

IP(s): 10.124.4.143

Bind to IP

Bind to the following IPv4: <All available addresses>

Optimise connection for the following IPv4: <None from the available>

Bind to the following IPv6: <All available addresses>

Optimise connection for the following IPv6: <None from the available>

RAS Secure Client Gateway recognizes both IPv4 and IPv6. By default, IPv4 is enabled. If a gateway has IPv6 and IPv4 configured, you can specify whether the clients should be connecting to using IPv4, IPv6, or both.

In the **Use IP version** drop-down list, select the IP version to use and then specify the corresponding properties for the selected version (or both if you selected IPv4 and IPv6).

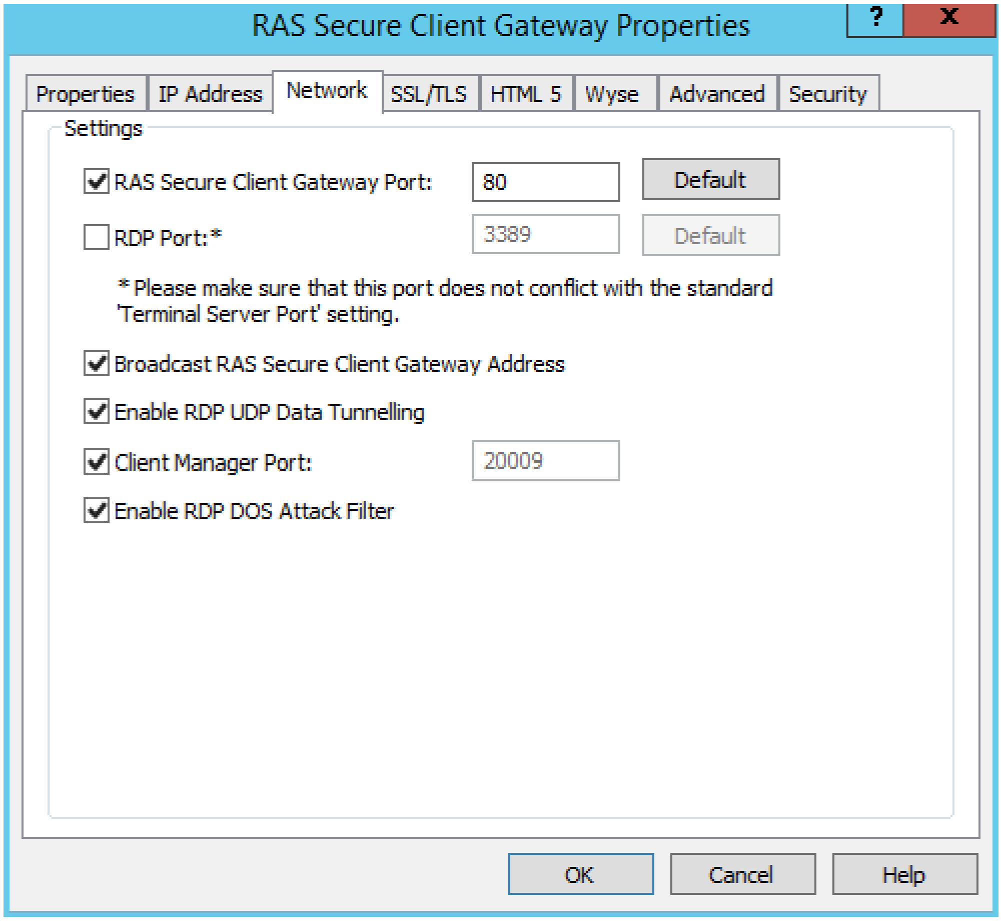
Click the **Resolve** button to resolve the IP addresses of the RAS Secure Client Gateway depending on the IP version selected.

The **Bind to the following IPv4/ IPv6** properties define the IP address on which the RAS Secure Client Gateway listens for incoming connections. You can select a specific address or all available addresses.

The **Optimize connection for the following IPv4/ IPv6** properties can be used when the connection between this gateway and the Parallels Client has a high latency (such as the Internet), this option will optimize traffic for better experience on the Parallels Client. You can select a specific address, all available addresses, or none to disable this option.

Configure RAS Secure Client Gateway Network Options

The **Network** tab page allows you to configure RAS Secure Client Gateway network options.



Settings

☑ RAS Secure Client Gateway Port: 80

□ RDP Port:* 3389

* Please make sure that this port does not conflict with the standard 'Terminal Server Port' setting.

☑ Broadcast RAS Secure Client Gateway Address

☑ Enable RDP UDP Data Tunnelling

☑ Client Manager Port: 20009

☑ Enable RDP DOS Attack Filter

By default a RAS Secure Client gateway listens on TCP ports 80 and 443 to tunnel all Parallels Remote Application Server traffic. To change the port, specify a new port in the **RAS Secure Client Gateway Port** input field.

TCP port 3389 is used for clients that require basic load balanced desktop sessions. Connections on this port do NOT support published items. To change the RDP port on a gateway select the **RDP Port** option and specify a new port.

Note: If RDP port is changed, the users need to append the port number to their connection string in the remote desktop client (e.g. `[ip address]:[port]`).

To enable UDP tunneling on Windows devices, select the **Enable RDP UDP Data Tunneling** option (default). To disable UDP tunneling, clear this option.

Select the **Client Manager Port** option to manage Windows devices from the **Client Manager** category. This option is enabled by default.

The **Enable RDP DOS Attack Filter** option denies chains of uncompleted sessions from the same IP address. For example, if a Parallels Client attempts to connect to the Parallels RAS with incorrect credentials multiple times, Parallels RAS will deny further attempts. This option is enabled by default.

The **Broadcast RAS Secure Client Gateway Address** option can be used to switch on the broadcasting of the gateway address, so Parallels Clients can automatically find their primary gateway. This option is enabled by default.

Configure SSL Encryption on a Gateway

The traffic between the users and the RAS Secure Client Gateway is always encrypted. The **SSL/TLS** tab page allows you to configure data encryption options.

By default, a self-signed certificate is installed during the RAS Secure Client Gateway installation and TLS v1.0, v1.1, or v1.2 is used. Each RAS Secure Client Gateway has its own certificate, which should be added to Trusted Root Authorities on the client side to avoid security warnings.

To issue a new self-signed certificate:

1. Select the **Enable SSL on Port** option and specify a port number (default is 443).
2. (Optional) Select the SSL version accepted by the RAS Secure Client Gateway from the **Accepted SSL Versions** drop-down list (default is TLS v1 - TLS v1.2).

   The available options are:

   - TLSv1.2 Only (Strong)
   - TLSv1.1-TLSv1.2
   - TLSv1-TLSv1.2
   - SSLv3-TLSv1.2
   - SSLv2-TLSv1.2 (Weak)
3. (Optional) Select the **Cipher Strength** as the certificate encryption algorithm strength of your choice. The default cipher strength is High. A stronger cipher allows for stronger encryption and thus increasing the effort needed to break it.
4. Click the **Generate new certificate** button and enter the required details.

   Note: To enable SSL using a certificate from a trusted authority, follow the procedure below.
5. Click **Save** to save all the details and generate a new self-signed certificate. The private key file and Certificate file will be automatically populated.

6 Click **OK** to save the options.

Using a Custom Cipher

Use the **Custom Cipher** field to specify a custom cipher string of your choice in accordance with the openSSL standards. Cipher strings used by Parallels Remote Application Server are described below:

Low: ALL:!aNULL:!eNULL

Med: ALL:!aNULL:!ADH:!eNULL:!LOW:!EXP:RC4+RSA:+HIGH:+MEDIUM

High:

- Min SSLv2 - ALL:!aNULL:!ADH:!eNULL:!LOW:!MEDIUM:!EXP:+HIGH
- Min SSLv3 - ALL:!SSLv2:!aNULL:!ADH:!eNULL:!LOW:!MEDIUM:!EXP:+HIGH
- Min TLSv1 - ALL:!SSLv2:!SSLv3:!aNULL:!ADH:!eNULL:!LOW:!MEDIUM:!EXP:+HIGH
- Min TLSv1_1 - ALL:!SSLv2:!SSLv3:!TLSv1:!aNULL:!ADH:!eNULL:!LOW:!MEDIUM:!EXP:+HIGH
- Min TLSv1_2 - ALL:!SSLv2:!SSLv3:!TLSv1:!TLSv1.1:!aNULL:!ADH:!eNULL:!LOW:!MEDIUM:!EXP:+HIGH

Note: By default only the connection between the gateway and the servers is encrypted. Change the connection mode to the Gateway SSL Mode from the connection properties on all Parallels Clients to also encrypt the connection between the users and the gateway.

To simplify the Parallels Client configuration, using a certificate issued either by a third party Trusted Certificate Authority or Enterprise Certificate Authority (CA) is recommended.

If an Enterprise CA certificate is used, Windows clients receive a Root or Intermediate Enterprise CA certificate from Active Directory. Client devices on other platforms require manual configuration.

If a third-party certificate issued by a well-known Trusted Certificate Authority (e.g. Verisign) is used, the client device trusts using Trusted Certificate Authority updates for the platform.

Using Third-Party Trusted Certificate Authority

1 In the RAS Console, navigate to **Farm** > **Gateway** > **Properties** and click the **SSL/TLS** tab.

2 Select TLS 1.2 as the SSL settings option.

3 Choose CSR.

4 Fill in the data.

5 Copy and paste the CSR into a text editor and save the file for your records.

6 Paste the CSR into the party Vendors Website page or email it to the vendor.

7 Request a return certificate in the following format: Apache, with the private, public and intermediate CA all in one file, with extension `.pem`.

8 When you receive the file, place it in a secure folder for backup retrieval.

9 Click **Import Public Key** and navigate to the folder (or navigate to a secondary location where you have a copy of the single all-in-one cert) and insert the `.pem` file into the **Certificate key** field.

10 Click **Apply** and **Test**.

> **Note:** The private key should already be populated from your initial CRS request.

Using Enterprise Certificate Authority

Use IIS to receive a certificate from Enterprise CA. The certificate should be exported in the `pfx` format and then converted into the PEM format using the OpenSSL tool, available at http://gnuwin32.sourceforge.net/packages/openssl.htm

> **Note:** The `trusted.pem` file on the Parallels Client side must include the intermediate certificate to be able to verify the cert from the third party vendor. If the intermediate certificate for the vendor is not in the `trusted.pem` file, you will have to paste it in manually, or create a `trusted.pem` template file with the proper Intermediate Certificates and then replace the old `trusted.pem` file with the newly updated one. This file resides in `Program Files\Parallels` or Program Files(x86)\ Parallels on the client side.

To convert a PFX file to a PEM file, follow these steps on a Windows machine:

1 Run the OpenSSL tool.

2 Create the `c:\certs` folder and copy the `cert.pfx` file into it.

3 Open the command prompt and enter `cd %ProgramFiles%\GnuWin32\bin`

4 Type the following command to convert the PFX file to unencrypted PEM file:

```
OPENSSL pkcs12 -in c:\certs\cert.pfx -out c:\certs\scg.pem -nodes
```

5 When prompted for the import password, enter the password you used when you exported the certificate to a PFX file. You should receive a message saying, "MAC verified OK".

Enable SSL on Parallels Secure Client Gateway with cert.pem

1 On the Parallels Client Gateway page, enable secure sockets layer (SSL) and click `[…]` to browse for the pem file.

2 Place the single file generated in the **Private Key** and **Public Key** fields.

3 Click **Apply** to apply the new settings.

4 Your browser may not support displaying this image.

Parallels Clients Configuration

In case the certificate is self-signed, or the certificate issued by Enterprise CA, Parallels Clients should be configured as described below.

1 Export the certificate in Base-64 encoded X.509 (.CER) format.

2 Open the exported certificate with a text editor, such as notepad or WordPad, and copy the contents to the clipboard.

To add the certificate with the list of trusted authorities on the client side and enable Parallels Client to connect over SSL with a certificate issued from an organization's Certificate Authority.

1 On the client side in the directory "C:\Program Files\Parallels\Remote Application Server Client\" there should be a file called `trusted.pem`. This file contains certificates of common trusted authorities.

2 Paste the content of the exported certificate (attached to the list of the other certificates).

Securing RDP-UDP Connections

A Parallels Client normally communicates with a RAS Secure Client Gateway over a TCP connection. Recent Windows clients may also utilize a UDP connection to improve WAN performance. To provide the SSL protection for UDP connections, DTLS must be used.

To use DTLS on a RAS Secure Client Gateway:

1 On the **SSL/TLS** tab page, make sure that the **Enable SSL on Port** option is selected (default).

2 On the **Network** tab page (p. 131), make sure that the **Enable RDP UDP Data Tunneling** option is selected (default).

The Parallels Clients must be configured to use the **Gateway SSL Mode**. This option can be set in the **Connections Settings** > **Connection Mode** drop-down list on the client side.

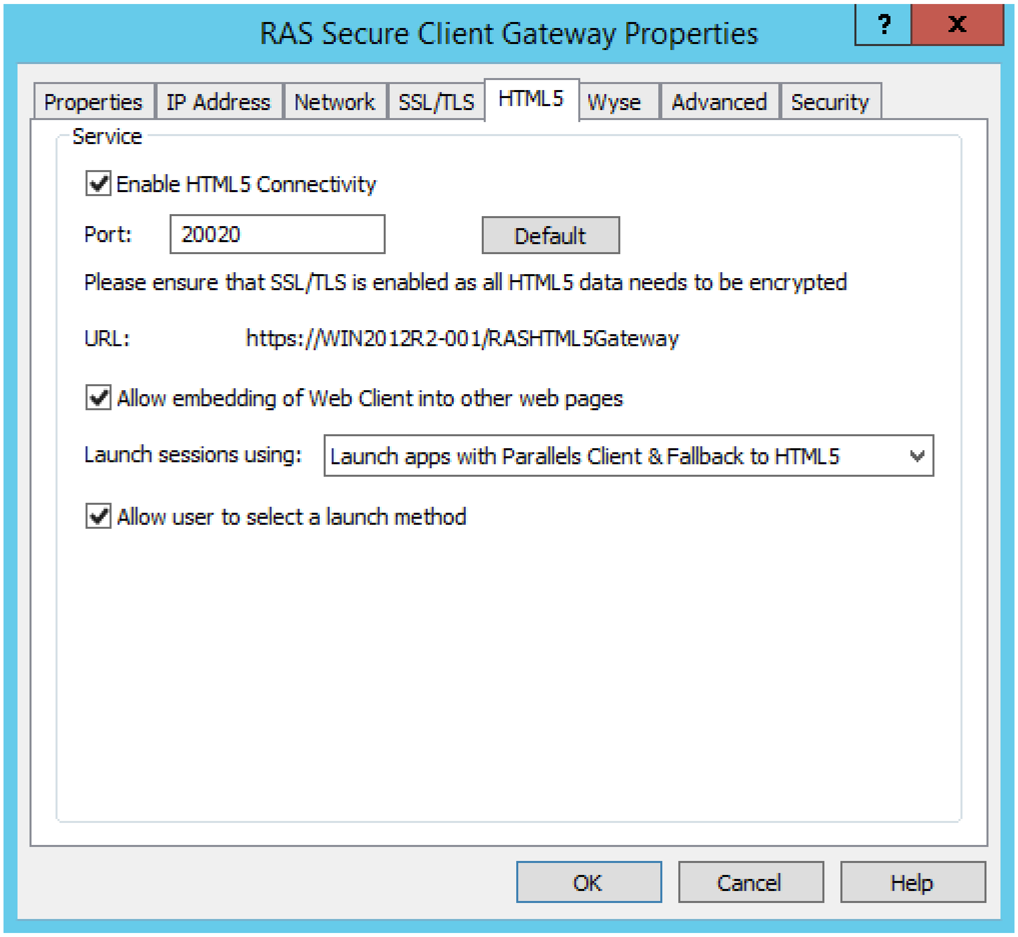
Once the above options are correctly set, both TCP and UDP connections will be tunneled over SSL.

Configure HTML5 Connectivity

HTML5 connectivity is a functionality built into RAS Secure Client Gateway. When the connectivity is enabled (it is by default), end users can view and work with published resources using Parallels HTML5 Client that runs inside a web browser**.** Parallels HTML5 Client works similarly to a platform-specific Parallels Client application with the exception that end users don't have to install any additional software on their computers. All they need is an HTML5-enabled web browser. This section describes how to configure HTML5 connectivity in the Parallels RAS Console. For the information about how to use it, please read **Using Parallels HTML5 Client** (p. 140).

Note: To use HTML5 connectivity, SSL must be enabled on the Gateway. When enabling HTML5, please verify that SSL is enabled on the **SLL/TLS** tab page or on your network load balancer.

To configure the HTML5 connectivity, click the **HTML5** tab.



☑ Enable HTML5 Connectivity

Port: 20020

Please ensure that SSL/TLS is enabled as all HTML5 data needs to be encrypted

URL: https://WIN2012R2-001/RASHTML5Gateway

☑ Allow embedding of Web Client into other web pages

Launch sessions using: Launch apps with Parallels Client & Fallback to HTML5

☑ Allow user to select a launch method

To enabled HTML5, select the **Enable HTML5 Connectivity** option. You can also specify a custom port number if necessary.

Other options on the HTML5 tab page are as follows:

URL: Indicates the complete URL that end users will need to enter in their web browsers to connect to Parallels RAS. The URL consists of the RAS Secure Client Gateway server FQDN (or computer name) or IP address followed by the `RASHTML5Gateway` string.

Allow embedding of Web Client into other web pages: If selected, the Parallels HTML5 Client web page can be embedded in other web pages. Please note that this may be a potential security risk due to the practice known as clickjacking.

Launch sessions using: Allows you to specify whether remote applications and desktops will be launched on user computers in a web browser (HTML5 Client) or in a platform-specific Parallels Client. Parallels Client includes a richer set of features compared to HTML5 Client, thus providing end users with a better user experience. Select one of the following:

- **Launch apps in browser only (HTML5 only)** — Users can run remote applications and desktops using Parallels HTML5 Client only. Use this option if you don't want your users to install a platform-specific Parallels Client for any reason.
- **Launch apps in Parallels Client** — Users can run remote applications and desktops in Parallels Client only. When a user connects to Parallels RAS using Parallels HTML5 Client, they will be asked to install the platform-specific Parallels Client before they can launch remote applications and desktops. A message will be displayed to the user with a link for downloading the Parallels Client installer. After the user installs Parallels Client, they can still select a remote application or desktop in Parallels HTML5 Client but it will open in Parallels Client instead.
- **Launch apps in Parallels Client and fallback to HTML5** — Both Parallels Client and a browser (HTML5) can be used to launch remote applications and desktops. Parallels Client will be the primary method; Parallels HTML5 Client will be used as a backup method if a published resource cannot be launched in Parallels Client for any reason. A user will be informed if a resource couldn't be opened in Parallels Client and will be given a choice to open it in the browser instead.

Allow users to select a launch method — If selected, users will be able to choose whether to open remote applications in a browser or in Parallels Client. You can enable this option only if the **Launch session using** option (above) is set to **Launch apps in Parallels Client and fallback to HTML5** (i.e. both methods are allowed).

Set the Gateway Mode and Forwarding Settings

To change the gateway mode from normal to forwarding mode or vice versa and configure related settings click the **Advanced** tab on the **RAS Secure Client Gateway Properties** dialog.

Normal Mode

Select **Forward requests to RAS Publishing Agent and HTTP Server** to set the gateway to normal mode.

From this tab you can also configure the HTTP server the gateway forwards requests to in the **HTTP Server(s)** drop down menu. The HTTP servers entry can be setup with IPv6 servers. Please note that the HTTP server needs to support the same IP version as that of the browser making the request.

Forwarding Mode

Select **Forward requests to next RAS Secure Client Gateway in chain (cascaded Firewall)** to set the gateway to forwarding mode.

Select the forwarding gateway from the Forwarding RAS Secure Client Gateway(s) drop down menu.

Note: When a gateway is set to work in Forwarding mode, it's possible to forward the data to another gateway which is listening on IPv6. It is recommended that gateways configured in forwarding mode are set to forward data to a gateway with the same IP version.

Managing Multiple IP Addresses on a Gateway

If the server the RAS Secure Client Gateway is running on has multiple IP addresses, the gateway will listen on all IP addresses by default. To configure the gateway to listen on a specific IP address, select the IP address in the **Bind Gateway to the following IP** drop-down list.

Enable Support for Wyse Thin Client OS

To publish applications from the Parallels Remote Application Server to thin clients using the Wyse Thin Client OS, select the **Enable Wyse ThinOS Support** option on the **Wyse** tab page.

By enabling this option, the RAS Secure Client Gateway will act as a Wyse broker. Once the DHCP server is configured (as explained on the tab page), click the **Test** button to verify the DHCP server settings.

Filter Access to a RAS Secure Client Gateway

You can allow or deny users access to a gateway based on a MAC address.

To configure a list of allowed or denied MAC addresses, click the **Security** tab and select one of the following options:

- **Allow all except.** All devices on the network will be allowed to connect to the gateway except those included in this list. Click **Tasks** > **Add** to select a device or to specify a MAC address.
- **Allow only**. Only the devices with the MAC addresses included in the list are allowed to connect to the gateway. Click **Tasks** > **Add** to select a device or to specify a MAC address.

Gateway Tunneling Policies

Tunneling policies can be used to load balance connections by assigning a group of terminal servers to a specific RAS Secure Client Gateway or RAS Secure Client Gateway IP address.

To configure tunneling policies, navigate to **Farm** / **Site** / **Gateways** and then click the **Tunneling Policies** tab in the right pane.

The **<Default>** policy is a preconfigured rule and is always the last one to catch all non-configured gateway IP addresses and load balance the sessions between all servers in the farm. You can configure the **<Default>** policy by right-clicking it and then clicking **Properties** in the context menu.

Adding a New Tunneling Policy

To add a new policy:

1. Click **Tasks** > **Add**.
2. Select a gateway IP address.
3. Specify to which Terminal Server(s) the users connecting to that specific gateway should be forwarded to.

Managing a Tunneling Policy

To modify an existing Tunneling Policy, right-click it and then click **Properties** in the context menu.

CHAPTER 10

Parallels HTML5 Client

Parallels HTML5 Client is a RAS client application that runs in a web browser. End users can use Parallels HTML5 Client to view, launch, and work with remote applications and desktop in a web browser. Compared to platform-specific Parallels Clients (e.g. Parallels Client for Windows, Parallels Client for iOS, etc.), Parallels HTML5 Client does not require end users to install additional software on their computers or mobile devices. Feature-wise, platform-specific Parallels Clients give users more control over their Parallels RAS experience than Parallels HTML5 Client. Nonetheless, Parallels HTML5 Client is a fully-featured platform-independent client providing end users with an alternate method of working with remote resources published via Parallels RAS.

The only requirement to use Parallels HTML5 Client is an HTML5-enabled web browser that must be installed on a client device. Read on to learn how to configure the HTML5 connectivity and use Parallels HTML5 Client.

In This Chapter

Configure HTML5 Connectivity

HTML5 connectivity is a part of RAS Secure Client Gateway. To be used by end users, the HTML5 connectivity must be enabled and configured in the RAS Console as described in **Enabling HTML5 Connectivity on the Gateway** (p. 135).

Open Parallels HTML5 Client

To open Parallels HTML5 Client, enter its URL in an HTML5-enabled web browser. The URL has the following format:

```
https://[hostname].[domain]/RASHTML5Gateway
```

Where [Hostname] is the hostname of the computer where a Parallels RAS Secure Client Gateway is running. The `RASHTML5Gateway` part must be used as-is. The following is an example of a valid URL:

```
https://myserver.mycompany.dom/RASHTML5Gateway
```

You can obtain the URL in the RAS Console by navigating to **Farm** / **Site** / **Gateways**. Right-click a RAS Secure Client Gateway and click **Properties**, then click the **HTML5** tab and copy the URL from the **URL** field.

When you open the URL in a web browser, the login page is displayed. Specify the user name and password and click **Login**. What happens next depends on how the HTML5 connectivity is configured on the server side (see **Enabling HTML5 Connectivity on the Gateway** (p. 135) for details). The following describes the three possible scenarios.

Launch apps in Parallels Client and fallback to HTML5

With this option configured on the server side, you will see a dialog box in the web browser with the following options:

- **Install Parallels Client**. Opens the Parallels Client download and installation page. Follow the instructions and install Parallels Client. After the installation, you should see the Parallels HTML5 Client displaying published resources that you can use. Please also note a link in the lower left corner of the screen displaying the Parallels Client version and build number.

  You can now run remote applications and desktop in Parallels Client or in a browser (HTML5). The default method for running applications and desktops is Parallels Client. To run a remote application or desktop in a browser, right-click it (or tap and hold on a mobile device) and then choose Parallels HTML5 Client.
- **Open in Parallels HTML5 Client**. Closes this dialog box and opens the main Parallels HTML5 Client screen. Remote applications or desktops will be launched in the web browser. When you open Parallels HTML5 Client the next time, you will again see the same dialog box with the same options.
- **Always open in Parallels HTML5 Client**. This option works similarly to the option above but your selection is remembered the next time you open Parallels HTML5 Client.

Launch apps in Parallels Client

When this option is configured on the server side, you will see a dialog box prompting you to install Parallels Client. Click the link provided to open the Parallels Client download and installation page and follow the instructions. After you install Parallels Client, the main Parallels HTML5 Client screen opens displaying published resources that you can use. If you now double-click or tap a resource, it will be launched in Parallels Client.

Launch apps in browser only (HTML5 only)

With this option configured, the main Parallels HTML5 Client screen opens with no additional prompts. Remote applications and desktops will be launched in the web browser.

Main Menu Options

To open the Parallels HTML5 Client main menu, click or tap the arrow next to your user name in the upper-right. You can select from the following menu options:

Settings: Allows you to configure the following settings:

- **Sound**. To play the sound on the local computer, select the **Bring to this computer** option. If sound is not supported by your browser, the menu will be disabled and you'll see a corresponding text message below it.
- **Redirect Links**. Select a desired redirection option from the following: **Do no redirect**, **Redirect URLs**, **Redirect email**, **Redirect all**. When a redirection is enabled, a link will be opened on the local computer.
- **Redirect Printers**. Select a printer redirection option: **RAS Universal Printer** (uses the RAS Universal Printing technology) or **Do not redirect** (printers will not be redirected).
- **Keyboard Mode**. Select **Universal Keyboard** or **PC Keyboard**. If you have problems typing certain characters, try selecting **PC Keyboard** and then selecting a proper layout in the **Keyboard Layout** drop-down list (see below).
- **Keyboard Layout**. Select a keyboard layout (e.g. English (US), English (UK), Japanese). To enable this drop-down list, the **Keyboard Mode** option must be set to **PC Keyboard**.

Change Password: Allows you to remotely change your domain password.

Download Client: Click this option to open a web page with instruction on how to download and install Parallels Client. You can also download Parallels Client by clicking the **Parallels Client not installed** link in the lower left corner of the web page.

Logout: Ends your session with Parallels RAS and logs you out.

Launching Remote Applications and Desktops

To launch remote applications and desktop in Parallels HTML5 Client:

- Double-click (or tap on a mobile device) an application or a desktop icon. The resource will open inside a web browser or in Parallels Client depending on the server-side HTML5 configuration (**RAS Secure Client Gateway Properties** > **HTML5** > **Launch sessions using** option).

- Right-click (or tap and hold on a mobile device) an application or a desktop to display a context menu. Note that the menu will only appear if the **Allow user to select launch method** option is selected on the **RAS Secure Client Gateway Properties** > **HTML5** tab page in the RAS console. The menu allows you to choose whether to open the resource in Parallels Client or Parallels HTML5 Client. If both methods are allowed and if Parallels Client is installed on the device, both options will be available.
- If a resource cannot be opened in Parallels Client due to an error, a message will be displayed with an option to open it in the web browser instead.

Other useful functionality on the main Parallels HTML5 Client screen includes the following:

- **Favorites list**. You can add a remote application or a desktop to the Favorites list, so you can easily find them. To do so, point to or tap an application or a desktop and then click or tap the star icon. To view the list, click or tap the star icon on the toolbar in the upper-right (next to the Search box). To remove a resource from the list, point to it in the list and click the "X" icon (or point to or tap the resource icon and then click or tap the start icon).
- **Search**. To search for a resource, begin typing its name in the Search box on the toolbar. The list will be filtered as you type to contain only the resources with matching names.
- **View a description**. To view a resource description, position the mouse pointer over it. The description will appear as a tooltip. This could be helpful if one or more resources are published using the same name. By reading the description, you can distinguish between them.
- **Taskbar**. When you launch a remote application or a desktop, its icon is added to the taskbar at the bottom of the screen. When the taskbar is full, items of the same type are grouped to save space. You can click or tap on a group to see the list of all running instances and to switch to or close a particular instance.

Using the Toolbar

When you launch a remote application or desktop in a web browser (HTML5), a toolbar appears on the right side of the web browser window. The toolbar appears differently for remote desktops and remote applications. The toolbar has also slightly different functions for desktop computers and mobile devices. The differences are explained in the subsequent topics.

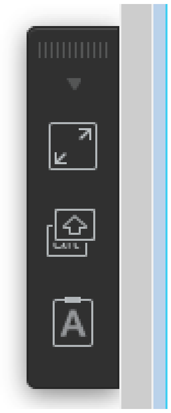
This section contains the following topics:

- **Using the Toolbar on Desktop Computers** (p. 144)
- **Using the Toolbar on Mobile Devices** (p. 146)

Using the Toolbar on Desktop Computers

Remote Desktop Toolbar

When you launch a remote desktop in a web browser on a desktop or laptop computer, the toolbar appears as follows:

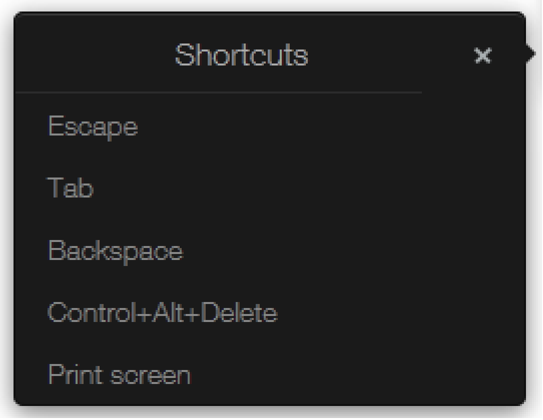


The top area of the toolbar is used to drag the toolbar up or down. Click and hold it, and then drag the toolbar to the desired position. The triangle icon is used to show or hide the toolbar items.

The main toolbar items are (from top to bottom):

- Display the remote desktop in full screen on the local computer.
- Display the **Shortcuts** menu (see below for the menu description).
- Display the remote clipboard. Please see **Using the Remote Clipboard** (p. 148) for more information.

The **Shortcuts** menu allows you to send keystrokes and key sequences to the remote desktop:

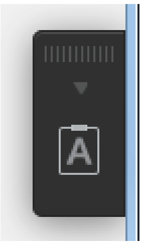


- **Escape**. Sends the "Escape" keystroke to the remote desktop.

- **Tab**. Sends the "Tab" keystroke.
- **Backspace**. Sends the "Backspace" keystroke.
- **Control+Alt+Delete**. Sends the Ctrl+Alt+Delete key sequence.
- **Print screen**. Sends the "Print Screen" keystroke. The screen will be printed to the clipboard of the remote desktop from where you can paste it into an application (e.g. Paint) running on the same remote computer.

Remote Application Toolbar

When you launch a remote application, the toolbar contains just the item that opens the remote clipboard. Please see **Using the Remote Clipboard** (p. 148) for more information.



Hiding the Toolbar

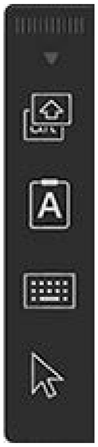
If you need to completely hide the toolbar, so it will not appear on the end users' screens, you can do it by modifying the configuration file on the server side as follows:

1. Navigate to the `C:\Program Files (x86)\Parallels\ApplicationServer\2XHTML5Gateway` folder.
2. Open the `config.ini` file.
3. Add the following line to the file: `env_hide_panel = true`

Using the Toolbar on Mobile Devices

Remote Desktop Toolbar

When you launch a remote desktop in a web browser on a mobile device, the toolbar appears as follows:



The triangle icon at the top is used to show or hide the toolbar items.

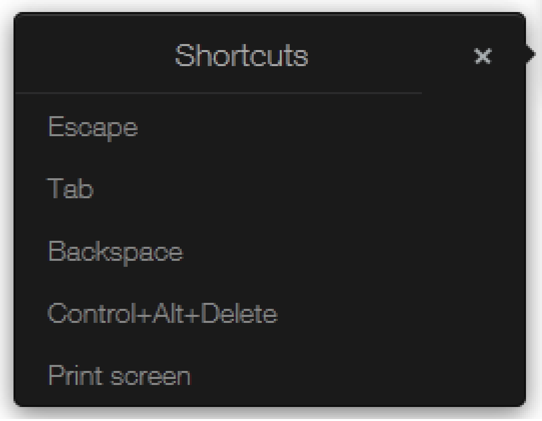
The main toolbar items are (from top to bottom):

- Display the **Shortcuts** menu (see below for the menu description).
- Display the remote clipboard. Please see **Using the Remote Clipboard** (p. 148) for more information.
- Display the native keyboard. This opens your mobile device native keyboard so you can type in an application on the remote desktop.
- The arrow icon is used to switch between the two available mouse input modes:

  Mode 1: The first mode (the arrow icon is white) follows the movement of your finger on the screen and performs a click on a remote desktop where you tap.

  Mode 2: The second mode (the arrow icon is red) displays a virtual mouse pointer on the remote desktop and allows you to move that pointer to a precise position with your finger. When you tap anywhere on the screen, the click on the remote desktop is performed at the precise position of the virtual mouse pointer.

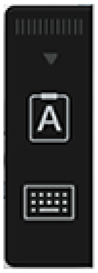
The **Shortcuts** menu allows you to send keystrokes and key sequences to the remote desktop:



- **Escape**. Sends the "Escape" keystroke to the remote desktop.
- **Tab**. Sends the "Tab" keystroke.
- **Backspace**. Sends the "Backspace" keystroke.
- **Control+Alt+Delete**. Sends the Ctrl+Alt+Delete key sequence.
- **Print screen**. Sends the "Print Screen" keystroke. The screen will be printed to the clipboard of the remote desktop from where you can paste it into an application (e.g. Paint) running on the remote computer.

Remote Application Toolbar

When you launch a remote application in a web browser on a mobile device, the toolbar includes only the remote clipboard and the native keyboard items. For more info about using the remote clipboard, please see **Using the Remote Clipboard** (p. 148).



Hiding the Toolbar

If you need to completely hide the toolbar, so it will not appear on the end users' screens, you can do it by modifying the configuration file on the server side as follows:

1. Navigate to the `C:\Program Files (x86)\Parallels\ApplicationServer\2XHTML5Gateway` folder.
2. Open the `config.ini` file.

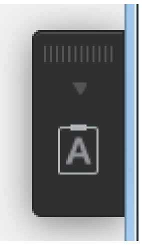
3 Add the following line to the file: `env_hide_panel = true`.

Using the Remote Clipboard

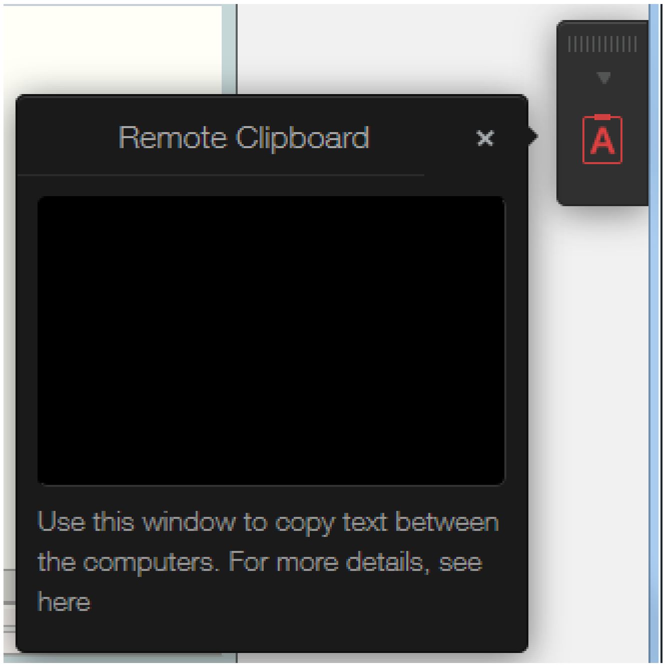
The Remote Clipboard feature allows you to copy and paste text between the remote application and the local device. The clipboard is accessed from the toolbar which appears on the right side of the web browser window when you launch a remote desktop or application.

To use the clipboard:

1 Expand the toolbar on the right side of the browser window and click the [A] icon.



2 This will open the Remote Clipboard window.



Use this window to copy text between the computers. For more details, see here

3 To copy text from the local computer to a remote application, type (or paste) it in the Remote Clipboard. The text is automatically saved on the remote computer clipboard, so you can use a standard paste command (e.g. Ctrl+V) to paste it into a remote application.

4 To copy text from a remote application to the Remote Clipboard, highlight it and use the standard copy command (e,g, Ctrl+C). The text will appear in the Remote Clipboard from where you can copy it to any application locally.

CHAPTER 11

RAS Web Portal

RAS Web Portal is a web page with auto client detection and a client distribution point. It provides access to published resources via a web browser.

Read on to learn how to install and configure a RAS Web Portal.

In This Chapter

RAS Web Portal: Prerequisites and Installation

The RAS Web Portal allows users to launch published applications and desktops from different farms.

Requirements

- Windows Server 2008, 2008 R2, 2012, 2012 R2
- Microsoft .NET Framework 3.5 or 4.5
- ASP.NET role
- IIS 7.0 (Windows Server 2008) or IIS 7.5 (Windows Server 2008 R2)
- IIS 8.0 (Windows Server 2012) or IIS 8.5 (Windows Server 2012 R2)
- Parallels Remote Application Server

Supported Client Operating Systems and Browsers

	IE9	IE10	IE11	MS Edge	Chrome	FireFox	Safari
Windows VIsta	●				●	●	●
Windows 7	●	●	●		●	●	●
Windows 8		●			●	●	●

Windows 8.1			●		●	●	●
Windows 10			●	●	●	●	●
Linux					●	●	●
macOS					●	●	●
iOS					●	●	●
Android					●	●	

Automatic Client Detection and Installation

	IE9	IE10	IE11	MS Edge	Chrome	FireFox	Safari
Windows VIsta	●				●	●	●
Windows 7	●	●	●		●	●	●
Windows 8		●			●	●	●
Windows 8.1			●		●	●	●
Windows 10			●	●	●	●	●
Linux					●	●	●
macOS					●	●	●
iOS					●	●	●
Android					●	●	

Installation

We recommend that you do not install the RAS Web Portal on an Active Directory machine.

Run the RAS Web Portal setup program by double-clicking the `RASWebPortal.msi` or `RASWebPortal-x64.msi` file on the IIS machine that will be used as your access point to the published applications.

To install RAS Web Portal:

1 Run the `RASWebPortal.msi` or `RASWebPortal-x64.msi` file on the IIS machine that will be used as your access point to the published applications.

2 The **RAS Web Portal Setup** wizard opens.

3 Read the info on the **Welcome** page and click **Next**.

4. On the next page, read the End-User License Agreement. If agreed, select the **I accept the terms in the License Agreement** option and click **Next**.
5. On the **RAS Web Server Port** page, specify the port number. The RAS Secure Client Gateway is installed on port 80 by default and is configured to forward HTTP requests to the local host on port 81. Therefore, clients will still be able to access the RAS Web Portal on port 80. You can choose to install the RAS Web Service on any other port, and also use an existing port used by other web sites.
6. Click **Next** and then click **Install**.
7. Click **Finish** when the installation is completed.

Please note that IIS7 caches dynamic content as well as static content. To disable the caching for .aspx, .asmx and .ashx pages for the RAS Web Portal directory with an asp.net page that depends on the session state, perform the following on the **RAS Web Server**, **2XWebPortal**, and **2XWebService**.

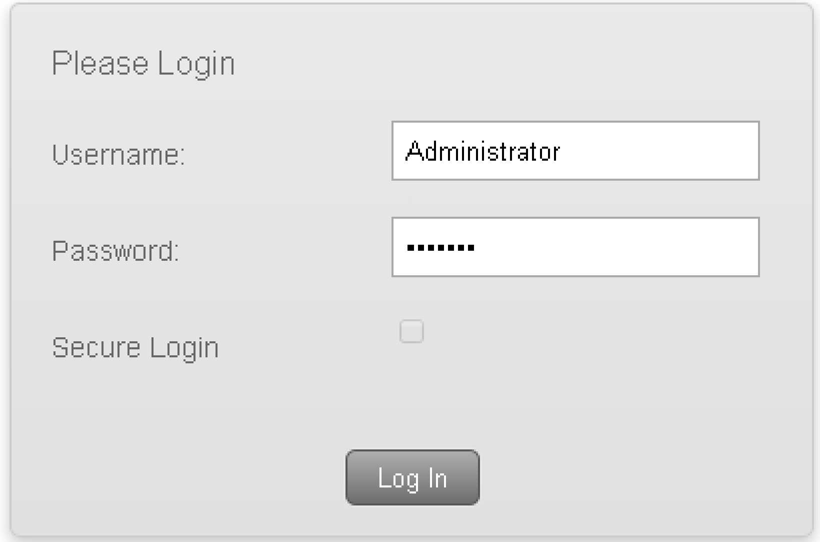
Disabling Caching for folders consisting on .aspx, .asmx and .ashx

1. Run the Server Management console.
2. Navigate to **Roles** > **Web Server (IIS)** > **Internet Information Services**.
3. Repeat steps 4 to 12 for the following sites: **RAS Web Server**, **2XWebPortal**, and **2XWebService**.
4. Select the folder that contains the .aspx, .asmx and .ashx pages for which you need to disable caching.
5. In the **Feature View**, double-click **Output Caching**.
6. If there is a rule there already for the .aspx extension, double click it and continue from step 8. Otherwise right click and select **Add**.
7. Enter .aspx for the **File name extension**.
8. Check **User-mode caching**.
9. Select **Prevent all caching**.
10. Check **Kernel-mode caching**.
11. Select **Prevent all caching**.
12. Click **OK**.
13. Close the Server Management Console.

Log In to RAS Web Portal

After installing RAS Web Portal, open the following URL in a web browser:

```
http://localhost/2XWebPortal/Admin.aspx
```



Please Login

Username: Administrator

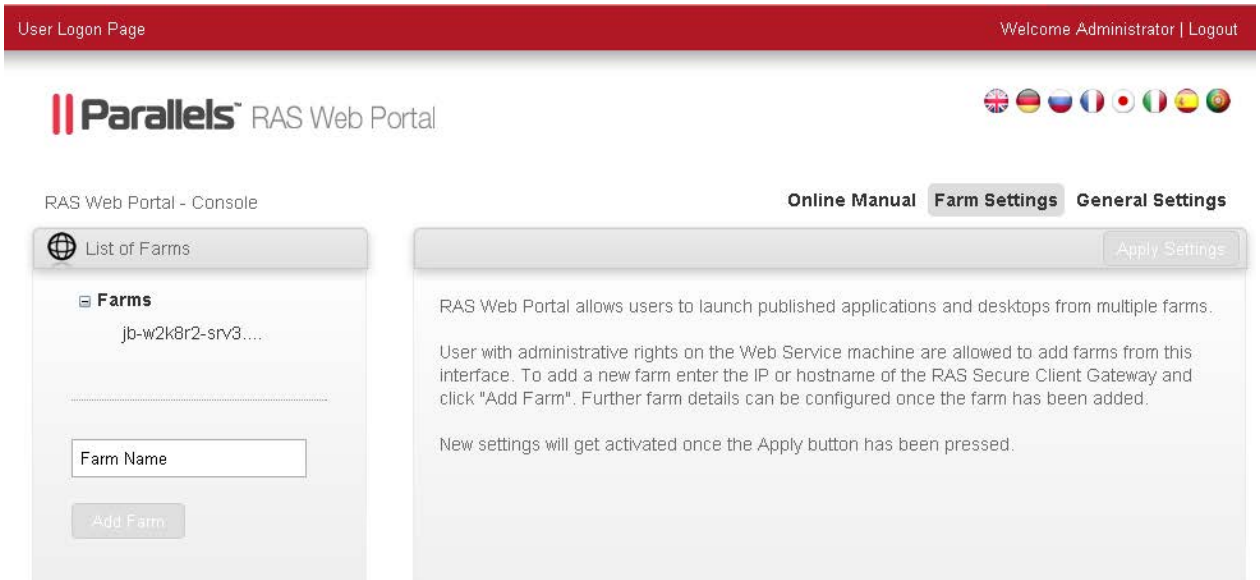
Password: ••••••••

Secure Login □

Enter a user name and password of the user with administrative privileges and click **Log In** to log into the RAS Web Portal.

Farm Settings

The **Farm Settings** page allows administrators to add multiple farms so that users can launch published applications and desktop from the **User Logon** page.



RAS Web Portal allows users to launch published applications and desktops from multiple farms.

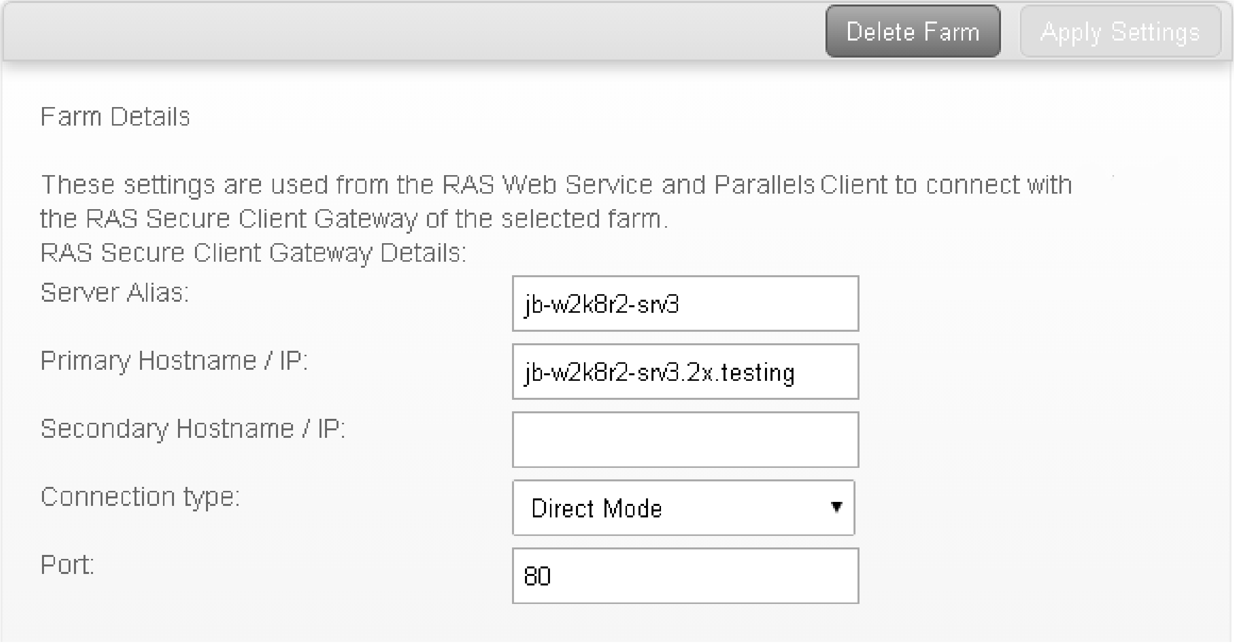
User with administrative rights on the Web Service machine are allowed to add farms from this interface. To add a new farm enter the IP or hostname of the RAS Secure Client Gateway and click "Add Farm". Further farm details can be configured once the farm has been added.

New settings will get activated once the Apply button has been pressed.

To add a farm, type the IP address or hostname of the RAS Secure Client Gateway and click **Add Farm**. The farm will be added to the left pane under the **List of Farms** tree.

Farm Details

The **Farm Details** page allows the administrator to configure properties. The following are the farm details for the selected farm. These settings are used for the RAS Web Service and the Parallels Client to connect to the RAS Secure Client Gateway.



Farm Details

These settings are used from the RAS Web Service and Parallels Client to connect with the RAS Secure Client Gateway of the selected farm.

RAS Secure Client Gateway Details:

Server Alias: jb-w2k8r2-srv3

Primary Hostname / IP: jb-w2k8r2-srv3.2x.testing

Secondary Hostname / IP:

Connection type: Direct Mode ▼

Port: 80

Server Alias. Enter an Alias name that describes better the farm you added. The 'Alias' name gives the connection a display name for better readability.

Primary Hostname / IP. This setting is added automatically when adding the farm. This would be the IP / Hostname of the RAS Secure Client Gateway.

Secondary Hostname / IP. A secondary Hostname or IP can be added for another RAS Secure Client Gateway. If the 'Primary Hostname' fails, there would be a secondary RAS Secure Client Gateway which will provide published applications and desktops to the user.

Connection Type. This is automatically set to 'Direct Mode' when the farm is added. The connection mode is the method the RAS Web Service uses to connect to the RAS Secure Client Gateway. Set the connection mode to 'SSL mode' so that a secure connection is tunneled between the RAS Web Service and the RAS Secure Client Gateway.

Port. The default port number is set to port 80. The port must be the same as that set on the RAS Secure Client Gateway.

Advanced Settings

The **Advanced Settings** page is used to overwrite farm settings in the Parallels Client. This will change the settings in the Parallels Client without having the users tampering with the settings.

Set the advanced settings as described below.

Override RAS Secure Client Gateway IP/Host. Select the ‘Override RAS Secure Client Gateway IP/Host’ to override the ‘Primary Hostname/IP’ of the farm. Optionally, the **Secondary Hostname/IP** property can be specified.

Override Gateway Port. Select this setting to override the ‘Gateway’ port other than the default port 80.

Override SSL Gateway Port. Select this setting to override the ‘Gateway SSL’ port other than the default port 443.

Default Connection Mode. The connection mode for the farm can be overwritten from any of the following:

- **Auto** — The ‘Connection Mode’ will be set automatically depending on the connection settings configured on the farm.
- **Gateway Mode** — Clients are connected with the RAS Secure Client Gateway and the session connection is tunneled through the first available connection. This mode is ideal for servers which are only reachable via the gateway and do not require a high level of security.
- **Direct Mode** — Clients first connect to the RAS Secure Client Gateway for the best available Server and then connect directly with that particular Server. This is best used when the client and the server are on the same network.
- **Gateway SSL Mode** — Clients connect to the remote RAS Secure Client Gateway in a secure mode. The data being tunneled is encrypted for having a secure connection.
- **Direct SSL Mode** — Clients first connect to the RAS Secure Client Gateway using SSL for the best available server and then connect directly with that particular server. This is best when the client and the server are on the same network and high security safeguards are required.

Applying the Settings

After configuring the settings for a farm, you need to apply your changes by clicking the **Apply Settings** button.

Deleting a Farm

To delete a farm, select the farm in the list and then click **Delete Farm**.

General Settings

On the **General Settings** page, administrators can configure logging, session timeout and other security settings, and can customize the appearance of the Parallels RAS Web Portal. Parallels RAS Web Portal settings can be replicated to other servers for backup purposes. Administrators can also check for the available Parallels RAS Web Portal updates.

Logging

Administrators can enable logging on the Parallels RAS Web Portal so that they can trace changes being performed on the service.

Select **Enable Logging** so that the Parallels RAS Web Portal starts logging any activity that is performed.

You can refresh the log view by clicking the **Refresh** button.

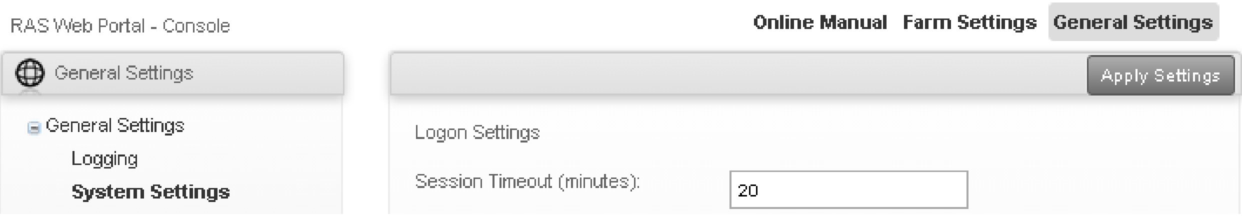
To clear the log entries, click on **Clear Log** and the system will remove the previous logs from the log view.

A copy of current logs can be downloaded from the Parallels RAS Web Portal by clicking the **Download repository** button. By default, a compressed log file is backed up on a weekly basis so that administrators can backtrack any logs if needed. Please note that this function downloads all the available logs (not just the Web Service logs).

System Settings

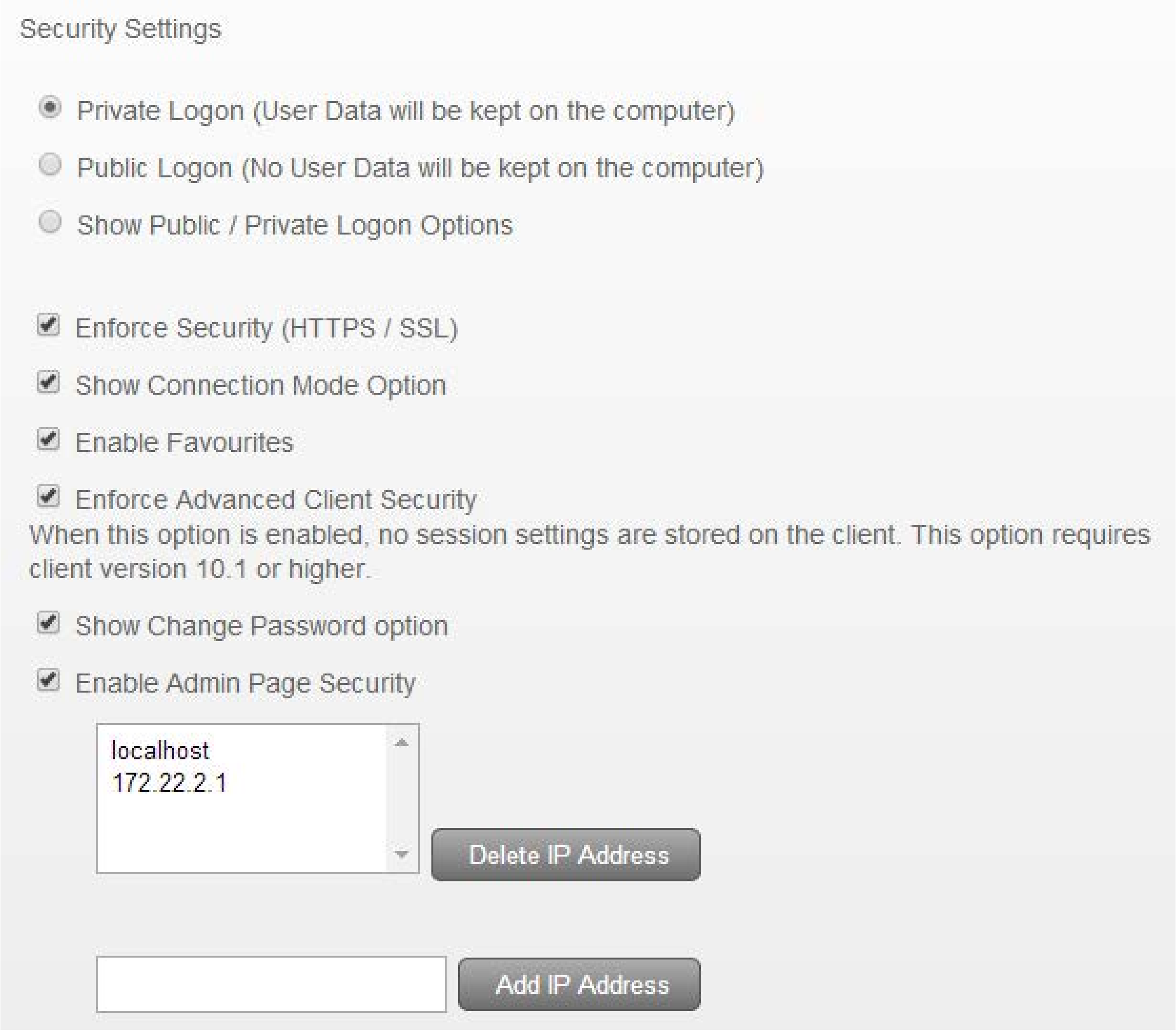
System Settings are divided in two sections: **Logon settings** and **Security Settings**.

In the **Logon Settings** section, the **Session Timeout** option specifies the possible idle time that the Parallels RAS Web Portal logon and administrative pages can remain without interaction before the pages prompt the user that the session has timeout and they will be automatically logged off the Parallels RAS Web Portal. The session timeout value is set to 20 minutes.



Session Timeout (minutes): 20

The **Security Settings** enhance security when logging into Parallels RAS Web Portal and when connecting to a RAS Secure Client Gateway.



Security Settings

● Private Logon (User Data will be kept on the computer)

○ Public Logon (No User Data will be kept on the computer)

○ Show Public / Private Logon Options

☑ Enforce Security (HTTPS / SSL)

☑ Show Connection Mode Option

☑ Enable Favourites

☑ Enforce Advanced Client Security

When this option is enabled, no session settings are stored on the client. This option requires client version 10.1 or higher.

☑ Show Change Password option

☑ Enable Admin Page Security

localhost
172.22.2.1

The security settings that can be set are described below.

Private Logon. Selecting this option will allow user data to be stored on the local computer. The data remains cached in the browser and will not be cleared when the user logs off the session.

Public Logon. Selecting this option will not allow user data to be stored on the local computer. The data will not remain persistent and will be cleared when the user logs off the session.

Show Public / Private Logon Options. Enable this option to allow the users to choose whether to connect as 'Public' or 'Private'. This option will be displayed on the Parallels RAS Web Portal User Logon Page.

Enforce Security (HTTPS / SSL). Enable this option to force the user to connect to the Parallels RAS Web Portal in SSL (HTTPS) mode. Users will not be allowed to connect to the 'Farm' if SSL is not enabled from the RAS Console.

Enable Favorites. Enable this option to show Favorites inside the User Logon Page.

Enforce Advanced Client Security. Enable this option, to only open the .2xa files when the user is logged on to the Parallels RAS Web Portal. Please note that a user cannot open the .2xa files when the Parallels RAS Web Portal session times out.

Show changed Password option. Enable this option, to show the 'Change Password' option on the User Logon Page.

Enable Admin Page Security. Enable this option so that administrators can only log into the Administrative Page from a machine that matches an IP address from the specified list. To add an IP Address, type it in the field provided and then click **Add IP Address**.

After configuring the System Settings, select **Apply Settings** so that the settings are saved.

Parallels Clients

To launch published applications and desktops, the Parallels Client needs to be installed on the Client. The Parallels RAS Web Portal can be configured to detect the Parallels Client automatically.

To detect Parallels Client Installation, select the **Client Detection** option.

If Parallels client detection fails, users can be notified by means of **Client Detection Failure Options**. The administrator can select from the following:

- **Show error message and allow retest**. Select this option so that an error message is shown and the user is allowed to perform a retest to detect the Parallels Client. This option will not provide the option to install the Parallels Client.
- **Show error message and allow installation or retest**. Select this option so that an error message is shown, providing the option to install the Parallels Client. The user can also choose to perform a retest to detect the Parallels Client.
- **Show error message and allow installation**. Select this option so that an error message is shown and an option is provided to install the Parallels Client. This option will not give the option to retest for Parallels Client detection.
- **Show error message only**. Select this option so that an error message is shown without providing the option to install or retesting for Parallels Client.

The Parallels Client can be downloaded for different OS platforms. The table below illustrates the platforms supported by the Parallels Client and the type of installation packages that can be downloaded for every OS.

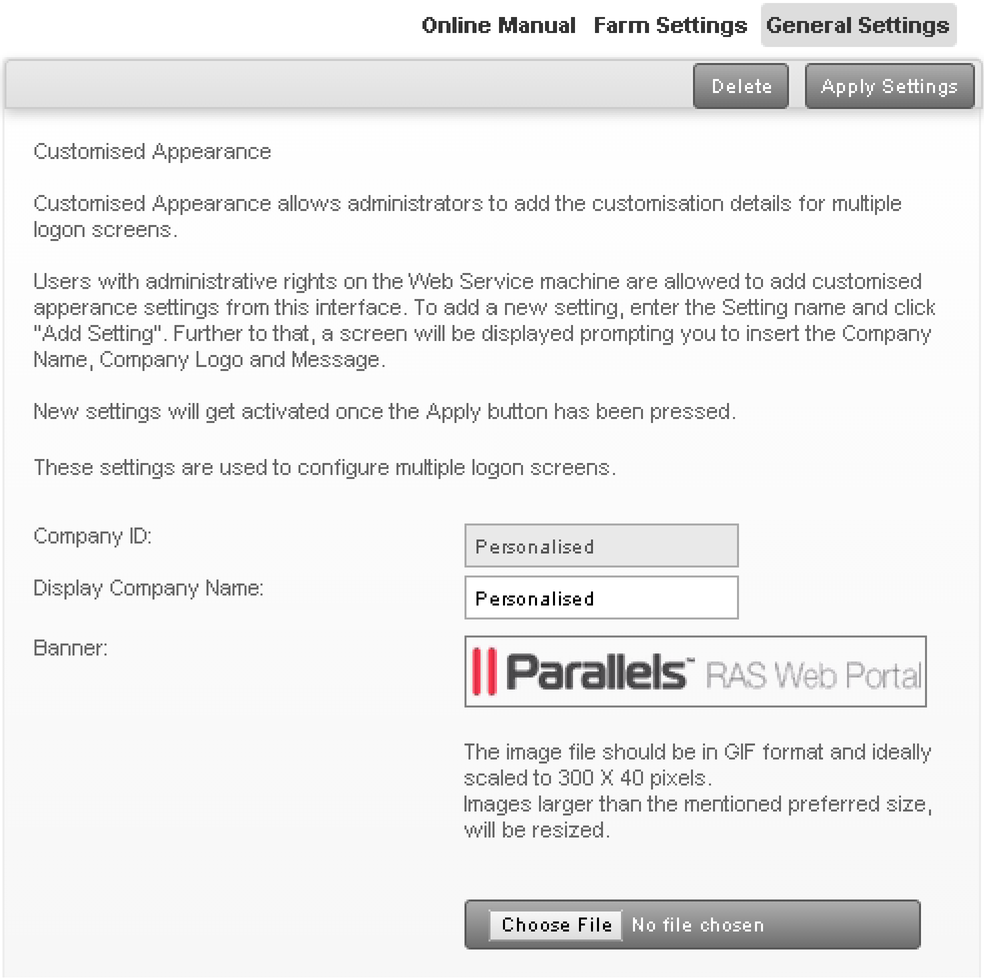
OS	Installation Type	Description

Windows	Full Client installation	This will perform the Parallels Client installation installing full resources.
	Basic Client installation	This will perform Parallels Client installation using minimal resources.
Linux	.deb package	This will download the Debian package from the Parallels website.
	.rpm package	This will download the RPM Package Manager from the Parallels website.
	.tar.bz2	This will download Parallels Client for Linux as a compressed file from the Parallels website.
Mac	.pkg	This will download Parallels Client from the Mac store and install it on the macOS desktop.
Android	.apk	This will download Parallels Client from the Google Play and install it on the Android device.
iOS		This will download Parallels Client from App Store and install it on the iOS device.

Customized Appearance

Customized appearance allows administrators to customize how the Parallels RAS Web Portal looks. Administrators can customize the Parallels RAS Web Portal by displaying a different company name, adding a custom banner, changing color themes and more.

To add settings to customize the appearance for Parallels RAS Web Portal, insert a friendly settings name inside the input text fields. Click **Add Settings** or press **Enter** to start customizing appearance settings.



Customised Appearance

Customised Appearance allows administrators to add the customisation details for multiple logon screens.

Users with administrative rights on the Web Service machine are allowed to add customised apperance settings from this interface. To add a new setting, enter the Setting name and click "Add Setting". Further to that, a screen will be displayed prompting you to insert the Company Name, Company Logo and Message.

New settings will get activated once the Apply button has been pressed.

These settings are used to configure multiple logon screens.

Company ID: Personalised

Display Company Name: Personalised

Banner:

The image file should be in GIF format and ideally scaled to 300 X 40 pixels.
Images larger than the mentioned preferred size, will be resized.

You can customize settings as described below.

Company ID. This setting is set by default in the same name when creating settings to customize the appearance for the Parallels RAS Web Portal.

Display Company Name. Type in a name that you want to display as company name other than the default setting set when creating settings to customize appearance.

Banner. Custom banners can be added to the Parallels RAS Web Portal. The banner should be an image in GIF format, and a size of not more than 300 x 40 pixels.

To upload a banner click the "Browse" button and select the banner. Click "Upload" so that the banner will be uploaded to the RAS Web Service machine.

Message. To display a message underneath the logon section when logging into Parallels RAS Web Portal from the 'User Logon Page', type inside the input text field. This can be used to describe the customized Parallels RAS Web Portal.

URL. The URL states provides the link so that users can connect to the customized Parallels RAS Web Portal. This is automatically generated when creating new customized settings.

> **Note:** The server which has the Parallels RAS Web Portal installation must be publicly accessible so that users can access the **User Logon** page.

Default Domain. Insert the default domain so that users will automatically log with the default domain when logging into the 'User Logon Page'.

Color Modification. From this section, administrators can configure the color scheme for every customized appearance. You can configure the colors by means of the color picker or color themes as illustrated below. More color themes can be created by picking other colors from the color picker. You can reset the Color Themes to default by clicking the **Reset** button.

CHAPTER 12

RAS Publishing Agents

RAS Publishing Agent provides load balancing of published applications and desktops. A RAS Publishing Agent is automatically installed on a server on which you install Parallels Remote Application Server and is designated as the master Publishing Agent. Each site must have a master RAS Publishing Agent, but can have secondary agents added to it. The purpose of secondary agents is to ensure that users do not experience any interruption of the service due to a possible failure of the master RAS Publishing Agent. This chapter describes how to add RAS Publishing Agents to a site and how to configure them.

In This Chapter

Viewing and Configuring RAS Publishing Agents

To view RAS Publishing Agents installed in a site, navigate to **Farm** / **Site** / **Publishing Agents** in the RAS Console. The installed Publishing Agents are listed on the **Publishing Agents** tab page in the right pane.

A site must have at least the master Publishing Agent installed, which is marked as "Master" in the **Priority** column. You can also add secondary agents to a site. We'll discuss secondary agents in the section that follows this one.

To modify the configuration of a RAS Publishing Agent:

1. Select a Publishing Agent, then click **Tasks** and choose **Properties**. The **Edit RAS Publishing Agent** dialog opens.
2. The **Enable Server in site** option is enabled for secondary Publishing Agents only. It is disabled for the master Publishing Agent.
3. The **Server** field specifies the FDQN or IP address of the server that hosts the RAS Publishing Agent.
4. The **IP** field specifies the server IP address. Click the **Resolve** button to obtain the IP address automatically using the FQDN specified in the **Server** field. This IP address is used so that multiple Publishing Agents share information in real time.

5 The **Alternate IPs** field specifies one or more alternate IP addresses separated by a semicolon. These addresses will be used if RAS Secure Client Gateways fail to connect to the RAS Publishing Agent using it's FQDN or the address specified in the **IP** field. This can happen, for example, if Gateways are connecting from a network which is not joined to Active Directory.

6 The **Description** field can be used to enter a user-defined description.

7 When you are done making the changes, click **OK** to save them and then click **Apply** in the main RAS console window.

The **Tasks** drop-down menu on the **Publishing Agents** tab page has the following additional items:

- **Add**. Adds a secondary RAS Publishing Agent to the site. See the section that follows this one for more information.
- **Check Agent**. Verifies that the RAS Publishing Agent installed on the server is functioning properly. It opens a dialog where you can see the verification results and optionally install (or uninstall) the Publishing Agent software on the server.
- **Promote Secondary to Master**. Promotes a secondary Publishing Agent to master. Use this option if you would like to make a different server to be the master Publishing Agent. The current master becomes a secondary RAS Publishing Agent.
- **Delete**. Deletes a selected secondary Publishing Agent from the site. To delete the master Publishing Agent, you first need to promote a secondary Publishing Agent to master.
- **Move Up** and **Move Down**. Changes the priority of a secondary Publishing Agent (moves it up or down in the priority list).
- **Logging**. Enables extended logging (normal logging is used by default). Also allows you to retrieve logs into a local file and clear all logs.

Secondary Publishing Agents

To ensure users do not experience an interruption of the service due to a failure of the master RAS Publishing Agent, one or more secondary Publishing Agents can be added to a site. With one or more secondary agents installed, the runtime data is replicated on each agent, so if any service fails, the downtime is reduced to a minimum. In addition, any active RAS Publishing Agent will be used for authentication purposes with both the AD and any 2nd level authentication provider used.

The master RAS Publishing Agent performs the same tasks as secondary Publishing Agents but has additional responsibilities. It manages certain processes that have to be managed by a single Publishing Agent. The following table lists processes managed by the master Publishing Agent and secondary Publishing Agents:

Process	**Master Publishing Agent**	**Secondary Publishing Agents**
Monitor PAs (counters)	Yes	Yes

Monitor Terminal Servers (counters)	Yes	Yes
Monitor VDI Hosts (counters)	Yes	Yes
Monitor TS Sessions (reconnection)	Yes	Yes
Monitor Deployed TS applications	Yes	Yes
Monitor VDI session (reconnections)	Yes	Yes
Manage system settings	Yes	No
Send licensing information & heart beat	Yes	No
Process and send CEP information	Yes	No
Send information to reporting server	Yes	No
Manage TS scheduler	Yes	No
Reporting engine information	Yes	Future versions
Shadowing	Yes	Future versions
Send email notifications	Yes	No

As a demonstration of how load distribution between multiple Publishing Agents works, consider the following example:

- Suppose we have two Publishing Agents: PA1 (master) and PA2 (secondary).
- Suppose we also have 10 Terminal Servers: TS1, TS2 ... TS10

The resulting load will be distributed as follows:

- TS1, TS2 ... TS4 will use PA1 as their preferred Publishing Agent.
- TS5, TS6 ... TS10 will use PA2 as their preferred Publishing Agent.

Planning for secondary publishing agents

RAS Publishing Agents running on the same site communicate with each other and share the load. The amount of data being transmitted from one agent to another is quite large, so a reliable high-speed communication channel must be ensured (e.g. a subnetwork can be configured for Publishing Agent communications).

When adding a secondary Publishing Agent to a site, you specify an IP address for it. Make sure that the IP addresses of all agents belong to the same network segment. The port that Publishing Agents use to communicate with each other is TCP 20030.

There's no physical limit to how many Publishing Agents you can add to a site. However, the best results are achieved with only 2-3 agents present (the two agent scenario is recommended).

> **Note:** Adding more than 2-3 secondary Publishing Agents to a site may have a reverse effect and actually degrade the system performance.

Adding a secondary RAS Publishing Agent to a site

To add a secondary RAS Publishing Agent:

1. In the RAS console, navigate to **Farm** / **Site** / **Publishing Agents**.
2. Click the **Tasks** drop-down menu and choose **Add** to launch the **Add RAS Publishing Agent** wizard.
3. The **Server** field specifies the FDQN or IP address of the server that hosts the RAS Publishing Agent.
4. The **IP** field specifies the server IP address. Click the **Resolve** button to obtain the IP address automatically using the FQDN specified in the **Server** field.
5. The **Alternative IPs** field specifies one or more alternative IP addresses, separated by a semicolon. These addresses will be used if RAS Secure Client Gateways fail to connect to the RAS Publishing Agent using it's FQDN or the address specified in the **IP** field. This can happen, for example, if Gateways are connecting from a different network, which is not joined to Active Directory.
6. Select the **Install a gateway with a publishing agent** option if you also want to install a RAS Secure Client Gateway on the specified server. If you select this option, you may also select the **Add an SSL certificate and enable HTML5 Gateway** option (for more info, please see **Enable HTML5 Support on the Gateway** (p. 135)).
7. Select the **Add Firewall Rules** option to automatically configure the firewall on the server.
8. Click **Next**.
9. On the next page, click **Install** to install the RAS Publishing Agent on the server. The **Installing RAS Redundancy Service** dialog opens.
10. Select the server on which the RAS Publishing Agent is to be installed and click **Install**.
11. Click **Done**.
12. Click **OK** to add the server to the farm.

Managing Secondary Publishing Agents

Enabling or Disabling a Secondary Publishing Agent

To enable or disable a secondary Publishing Agent on a site, select it in the **Publishing Agents** list and then select or clear the check box at the beginning of the row.

Changing the Secondary Publishing Agent Priority

Each RAS Publishing Agent in the list is given a priority. By default, the local RAS Publishing Agent is given the master priority which cannot be changed. To change the priority of other Publishing Agents in the farm, select a Publishing Agent and use the Move Up and Move Down buttons to move it up or down the list. The higher it is in the list, the higher the priority.

Promoting a Secondary Publishing Agent to the Master Publishing Agent

If the master Publishing Agent cannot be recovered, you can promote a secondary Publishing Agent to master as follows:

1. Open the Parallels Remote Application Server Console on the server that you would like to promote (all required files are automatically installed when a server is added to a site as a secondary RAS Publishing Agent).
2. Select the **Farm** category and navigate to the **Publishing Agents** node.
3. Select the RAS Publishing Agent and then click **Promote Secondary to Master** in the **Tasks** drop-down menu.
4. Click **OK** once the process is finished.

Deleting a Secondary Publishing Agent

To delete a secondary Publishing Agent, select it in the list and then click **Delete** in the **Tasks** drop-down menu.

CHAPTER 13

Load Balancing

This chapter describes load balancing options that you can use in Parallels Remote Application Server.

In This Chapter

Resource Based & Round Robin Load Balancing

Load Balancer is designed to balance RDS and VDI host connections made from Parallels Clients.

The following types of load balancing methods are available:

- **Resource Based.** Distributes sessions to servers depending on how busy the servers are. Therefore a new incoming session is always redirected to the least busy server.
- **Round Robin**. Redirects sessions in sequential order. For example the first session is redirected to server 1, the second session is redirected to server 2 and the third session is redirected to server 1 again when there are two terminal servers in the farm.

Both methods are explained in this and the following subsections.

Load Balancing options can be configured from the **Load Balancing** category in the RAS Console.

Enabling Resource Based Load Balancing

Load balancing is enabled by default when more than one server is available on a site. The resource-based load balancing is the default method.

To switch back to resource-based from round-robin load balancing, select **Resource Based** in the **Method** drop-down list.

Configuring Resource Counters

Resource-based load balancing uses the following list of counters to determine if a server is busier than the other/s and vice versa:

- **User sessions.** Redirect users to a server with the least number of sessions
- **Memory**. Redirect users to the server with the best free/used RAM ratio
- **CPU.** Redirect users to the server with the best free/used CPU time ratio

When all of the counters are enabled, the RAS LoadBalancer adds the counter ratios together and redirects the session to the server with the most favorable combined ratio.

To remove a counter from the equation, clear the checkbox next to the counter name in the **Counters** section.

Round Robin Load Balancing

Round-robin load balancing redirects sessions in sequential order. For example, with two RDS servers in the farm, the first session is redirected to server 1, the second session is redirected to server 2, and the third session is redirected to server 1 again.

Enabling Round Robin Load Balancing

To enable round-robin load balancing select **Round Robin** in the **Method** drop-down list.

Session Options

Reconnect to Disconnected Sessions. Enable this option to redirect incoming user sessions to a previously disconnected session owned by the same user.

Reconnect sessions using client's IP address only. When reconnecting to a disconnected session, the Parallels Remote Application Server will match the username requesting to reconnect with the username of the disconnected session to match the sessions. With this option enabled, the Parallels Remote Application Server will determine to which disconnected session to reconnect the session by matching the source IP address.

Limit Number of Sessions for Users. Enable this option to ensure that the same user does not open multiple sessions.

Load Balancing Advanced Settings

Excluding a Process from the CPU Counter

To exclude a process so it does not affect the free/used CPU time ratio on a server, follow the procedure below:

- Click the **Configure** button at the bottom of the **Load Balancing** options.
- Select the **Enable CPU Load Balancer** option and click **Exclude List**.

- Click **Add** to select a process in the list of running processes. Alternatively you can specify a process name in the **Please Enter Process Name** input field at the bottom of the dialog.
- Click **OK** to close the **Processes Exclude List** dialog or **Add** to add other processes.

To remove a process from the processes excluded list highlight the process and click **Remove**.

High Availability Load Balancing

High Availability Load Balancing (HALB) is a software layer that sits between the user and RAS Secure Client Gateways. Multiple HALB appliances can run simultaneously, one acting as the master and others as slaves. The higher the number of HALB appliances available, the lower the probability that users will experience downtime. Master and slave appliances share a common or virtual IP address (also known as VIP or VIPA). Should the master HALB appliance fail, a slave is promoted to master and takes its place seamlessly without affecting the end user connection.

A HALB setup is per site, which means that you need at least one HALB for each site. Since HALB is a single point of contact for the client software, it is recommended to have at least two HALB appliances per site for redundancy.

Setting up High Availability Load Balancing is a 2 stage process:

1. Installing a HALB appliance.
2. Configuring the HALB appliance in the RAS console.

Hypervisor Prerequisites

Before configuring HALB in the RAS console, first import a HALB appliance to either of the following Hypervisor platforms: Microsoft Hyper-V, Virtual Box or VMware. An appliance is a pre-configured virtual machine with the operating system installed and all relevant settings configured.

Virtualbox/VMware

For Virtual Box or VMware, this appliance should be imported with either the OVA or zipped VMDK appliance file obtained from the following locations:

- VMDK: `http://download.parallels.com/ras/v15/RAS_VDI_Appliance.vmdk.zip`
- OVA: `http://download.parallels.com/ras/v15/RAS_VDI_Appliance.ova`

If deployed via the OVA file, the VM is applied with machine specifications already configured. Alternatively deployment via the VMDK file deploys the VM without pre-configured specifications. The minimum specifications for this VM are outlined below:

1. 1 CPU
2. 256 mb RAM

3 1 Network Card

Microsoft Hyper-V

For Microsoft Hyper-V this appliance should be imported with the VHD file obtained from this location: `http://download.parallels.com/ras/v15/RAS_HALB_Appliance.vhd.zip`

Installing a HALB Appliance

The HALB appliance should be imported on a hypervisor running on a separate machine connected to the same local network as Parallels RAS.

Import the HALB appliance on a supported hypervisor using the following step:

1. Import the HALB appliance file in the virtualization platform's management console.
2. Power up (boot) the new appliance to display the **HALB - First** boot configuration screen.
3. Adjust the network settings (if necessary) and click **Apply** to continue.
4. The Configuration Console is displayed and the HALB appliance is ready to be added to a RAS farm.

Note: Repeat the process above to create multiple HALB appliances.

Configuring HALB Appliances in the RAS Console

After you install a HALB appliance, you need to configure it.

In the RAS console, navigate to **Farm** / **Site** / **HALB**.

The HALB Tab Page

Select the **Enable HALB** option to enable High Availability Load Balancing.

Set the **Virtual IP** address options as follows:

- Select the IP version (IPV4, IPV6, or both) that you would like to use.
- Specify the IP address (or addresses if both version are selected) and their corresponding property (subnet mask, prefix). This is the IP address that clients will connect to. This will also be a floating IP address used by this and other HALB appliances.

Select the **LB Gateway Payload** option to load-balance normal gateway connections and then click **Configure.**

1. In the **HALB Configuration** dialog, specify the port number that will be used by HALB appliances to forward traffic to gateways (the port configured on the gateway).
2. Select the gateways that the HALB appliance will load-balance.

3 Click **OK** to close the **HALB Configuration** dialog and return to the **HALB** tab page.

If required, select the **LB SSL Payload** option to load-balance SSL connections and then click **Configure.**

1 In the the **HALB Configuration** dialog, specify the port number that will be used by HALB appliances to forward traffic gateways (443 by default).

2 In the **Mode** drop-down list, select **Passthrough** or **SSL Offloading** to specify where the SSL decryption process is performed. By default, the SSL connections are tunneled directly to the gateways (referred to as passthrough) where the SSL decryption process is performed.

   If you select the **SSL Offloading** mode, click **Configure**. The **SSL** dialog opens.

   The SSL Offloading mode requires an SSL certificate to be installed on HALB appliances. Specify the following options in the **SSL** dialog to generate a new certificate:

   - **Accepted SSL Versions.** Select an SSL version.
   - **Cipher Strength**. Select the cipher strength of your choice. To specify a custom cipher, select **Custom** and then specify the cipher in the **Cipher** field.

   Click **Generate new certificate** and enter the required details. The **Private Key file** and **Certificate file** options are populated automatically.

   Alternatively, click **Generate certificate request**, fill in the details and click **Save** to bring up the certificate request window. Click **Copy** to copy the request. This certificate request should be sent to a certificate authority. Once you receive an SSL certificate from the certificate authority, click the **Import public key** button and select the certificate file containing the public key.

3 In the **HALB Configuration** dialog, select the gateways that the HALB appliance will load-balance and click **OK** to close the dialog.

Configure the remaining properties on the **HALB** tab page:

1 Select the **Client Management** option to enable management of Windows devices connected through HALB.

2 Select the **Enable RDP UDP Data Tunneling** option to enable UDP tunneling on Windows devices.

3 The **Maximum sessions per device** property specifies the maximum number of simultaneous connections allowed. Use the default value or specify your own.

The Devices Tab Page

1 Click the **Devices** tab to add HALB appliances that will be managed by this farm.

2 To add appliances:

3 Click **Tasks** > **Add** (or click the **+** icon) to bring up the **Add HALB Devices** dialog.

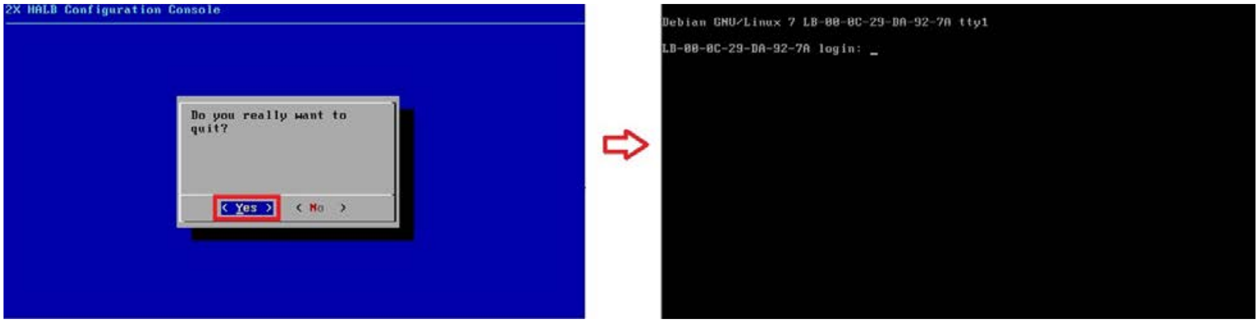
   Parallels RAS is capable of detecting HALB appliances over the network and display them as a list. Selecting detected HALB appliances from this list is the preferred method for adding new appliances. If, for any reason, an appliance cannot be detected, you can add it manually by specifying the appliance IP address in the **IP Address** field.

4 Click **OK** to close the **Add HALB Devices** dialog. The appliance is initialized and added to the list on the **Devices** tab page.

5 Finally, click **Apply** for the new HALB configuration to be applied to all added HALB appliances.

For additional information, please see the following KB article: http://kb.parallels.com/en/123082

Changing HALB Appliance Password

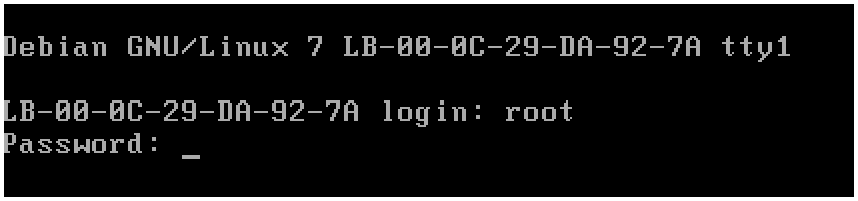


```
Debian GNU/Linux 7 LB-00-0C-29-DA-92-7A tty1

LB-00-0C-29-DA-92-7A login: _
```

When the HALB configuration console shown above is quit, login credentials are requested to log back in. Follow the steps below to set login credentials for the HALB device.

1 Boot the Appliance.

2 Press the <ALT> – <F1> key combination. A login prompt should be displayed.

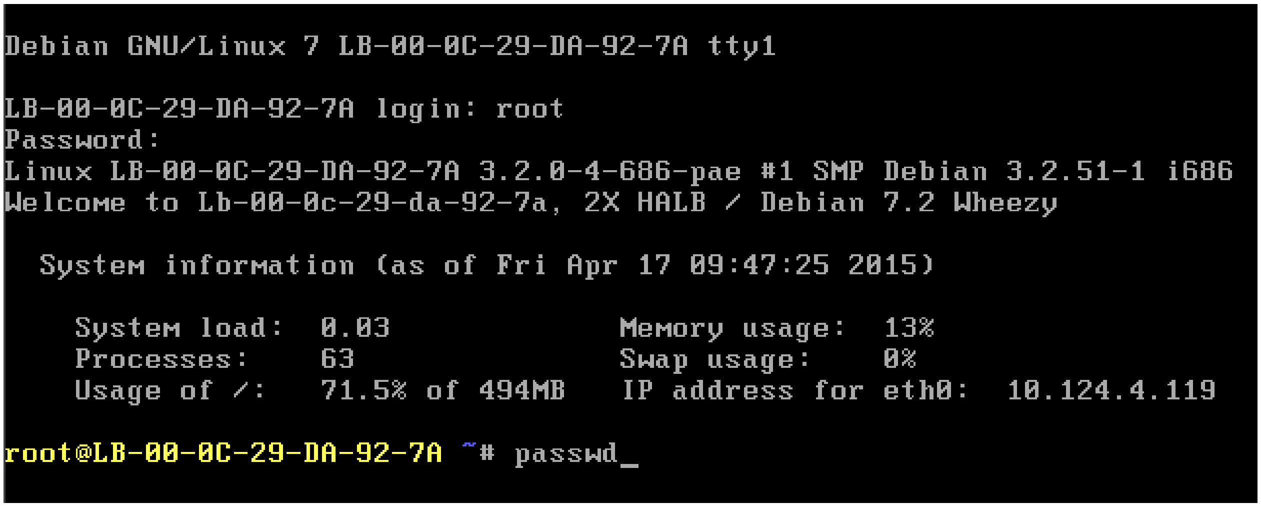


```
Debian GNU/Linux 7 LB-00-0C-29-DA-92-7A tty1

LB-00-0C-29-DA-92-7A login: root
Password: _
```

3 Type in the following credentials:

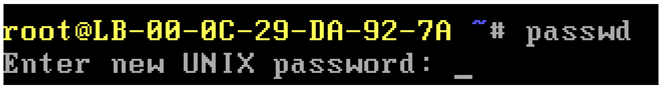
- **login** – `root`

- **password** – `Pa$$w0rd` (note that "0" is zero, not the letter "O").



```
Debian GNU/Linux 7 LB-00-0C-29-DA-92-7A tty1

LB-00-0C-29-DA-92-7A login: root
Password:
Linux LB-00-0C-29-DA-92-7A 3.2.0-4-686-pae #1 SMP Debian 3.2.51-1 i686
Welcome to Lb-00-0c-29-da-92-7a, 2X HALB / Debian 7.2 Wheezy

  System information (as of Fri Apr 17 09:47:25 2015)

    System load:  0.03              Memory usage:  13%
    Processes:    63                Swap usage:    0%
    Usage of /:   71.5% of 494MB    IP address for eth0:  10.124.4.119

root@LB-00-0C-29-DA-92-7A ~# passwd_
```

4 Once logged in, execute the password changing command by typing passwd.



```
root@LB-00-0C-29-DA-92-7A ~# passwd
Enter new UNIX password: _
```

5 Type in and confirm the new password.

Upon completion you may login to the HALB device with the new password set after the HALB configuration console is quit.

CHAPTER 14

Universal Printing

Printer redirection enables users to redirect a print job from a remote application or desktop to their local printer, which can be connected to the user's computer or be a local network printer attached via an IP address. RAS Universal Printing simplifies the printing process and solves most printer driver issues by eliminating the need for a remote server to have a printer driver for a specific local printer on the client side. Therefore, a user can print regardless of which printer they have installed locally, and the RAS administrator doesn't have to install a printer driver for each printer connected to the local network.

This chapter describes how to configure and use RAS Universal Printing services.

In This Chapter

Managing Universal Printing Servers

To configure RAS Universal Printing, select the **Universal Printing** category in the RAS Console.

By default, the Universal Printing driver is automatically installed together with a Terminal Server Agent, VDI Guest VM Agent, or a Remote PC Agent. Therefore, upon adding a server to the farm, the Universal Printing is already enabled. The Universal Printing driver is available as a 32 bit and 64 bit version.

Enabling and Disabling Universal Printing Support

To enable or disable the Universal Printing support for a server, right-click the server in the **Servers in Site** list and click **Enable** or **Disable** in the context menu.

Configuring a Printer Renaming Pattern

By default, Parallels Remote Application Server renames printers using the following pattern: `%PRINTERNAME% for %USERNAME% by RAS`. For example, let's say a user named Alice has a local printer named Printer1. When Alice launches a remote application or desktop, her printer is named `Printer1 for Alice by RAS`.

To change the default printer renaming pattern, specify a new pattern in the **Pattern** input field. To see the predefined variables that you can use, click the [...] button next to the **Pattern** input field. The variables are:

- `%CLIENTNAME%` – the name of the client computer.
- `%PRINTERNAME%` — the name of a printer on the client side.
- `%USERNAME%` — the name of the user connected to RAS.
- `%SESSIONID%` — RAS session ID.
- `<2X Universal Printer> Legacy mode` — This means that only one printer object will be created in the terminal (RDP) session.

You can also use certain other characters in a printer renaming pattern. For example, you can define the following commonly used pattern: `Client/%CLIENTNAME%#/%PRINTERNAME%`. Using this pattern (and the user named Alice from the example above), a local printer will be named `Client/Alice's Computer#/Printer1`

You can specify a different printer renaming pattern for each server in the **Servers in Site** list.

Note: Redirected printers are only accessible by the administrator and the user who redirected the printer.

Universal Printing Filtering

A system administrator can control the list of client-side printer drivers which should be allowed or denied the Universal Printing redirection privileges.

Using this functionality you can:

- Avoid server resource overloading by non-useful printer redirection. Since the majority of users choose to redirect all local printers (this is default setting), a large number of redirected devices is created on the server which are not really used. It's mostly related to various paperless printers like PDFCreator, Microsoft XPS Writer, or various FAX devices.
- Avoid server instability with certain printers. There are some printers that might create server instability (spooler service component) and as the result deny printing services as a whole for all connected users. It is very important that the administrator has the ability to include such drivers to the "deny" list to continue running printing services.

To specify printer filtering:

1. In the Parallels Remote Application Server Console, navigate to **Universal Printing** / **Printer Drivers**.
2. In the **Mode** drop-down list, select which printers should be allowed redirection from the following options:

- **Allow redirection of printers using any driver** — (default) This option places no limitation on the the type of driver a printer is using to use redirection privileges.
- **Allow redirection of printers using one of the following drivers** — Only the printers using the drivers listed in the box below the **Mode** field are allowed redirection. To add a printer driver to the list, click the **Tasks** > **Add** (or click the **+** icon) and type the printer driver name in the edit field provided.
- **Don't allow redirection of printers that use one of the following drivers** — This is probably the most useful option in the context of this feature. The printers that use the drivers specified in the list will be denied redirection privileges. All other printers will be allowed to use redirection. To add a printer driver to the list, click the **Tasks** > **Add** (or click the **+** icon) and type the printer driver name in the edit field provided.

3 To delete a printer driver from the list, click **Tasks** > **Delete** or click the minus-sign icon.

4 When done making changes, click the **Apply** button to save the changes.

Please make a note of the following:

- When adding a printer driver to the list, type the printer *driver* name, NOT the printer name.
- The driver names comparison is case insensitive and requires full match (no partial names, no wildcards).
- The settings that you specify on this tab page affect the entire site (not an individual server).

Font Management

Fonts need to be embedded so that when printing a document using Universal Printing the document is copied to the local spooler of the client machine to be printed. If the fonts are not present on the client machine the print out would not be correct.

To control the embedding of fonts within a print job use the **Fonts Management** tab page and check/uncheck the option **Embed Fonts**.

Excluding Fonts from Embedding

To exclude a specific font type from being embedded, click **Tasks** > **Add** in the **Exclude the following Fonts from embedding** section and select a font from the list.

Automatically Install Fonts on Servers and Clients

To automatically install a specific font type on servers and clients, click **Tasks** > **Add** in the **Auto install fonts** section and select the fonts from the list.

Note: By default, fonts added to the auto install list will be excluded from the embedding list because the fonts would be installed on the Windows clients, therefore there is no need for them to be embedded. Clear the option **Automatically exclude font from embedding** in the select font dialog so the font is not excluded from the embedding list.

Resetting List of Excluded Fonts to Default

To reset the list of excluded fonts to default, click **Tasks** > **Reset to Default**.

You can also specify a universal printing compression policy. For more info see **Client Policies / Experience** (p. 197).

CHAPTER 15

Universal Scanning

Scanner redirection enables users who are connected to a remote desktop or accessing a published application to make a scan using the scanner that is connected to the client machine. This chapter describes how to configure and use RAS Universal Scanning services.

In This Chapter

Managing Universal Scanning

Universal Scanning uses TWAIN and WIA redirection to let any application using either technology hardware connected to the client device for scanning. With Universal Scanning there is no need to install a specific scanner driver on the server. Only one scanner is shown on the server regardless of the number of users and sessions currently in use on the terminal server.

Note: The server feature **Desktop Experience** is required in order to enable both WIA and TWAIN scanning on Terminal Servers.

To configure Universal Scanning, select the **Universal Scanning** category in the RAS Console.

By default, the Universal Scanning driver is automatically installed with the Terminal Server, Guest VM, and Remote PC agents. Therefore, upon adding a server to the farm the Universal Scanning is installed.

Note: The Universal Scanning driver is available as a 32 bit and 64 bit version. Currently, only 32 bit applications are supported.

Configuring a Scanning Rename Pattern

By default, Parallels Remote Application Server renames scanners using the following pattern: `%SCANNERNAME% for %USERNAME% by RAS`. For example, if a user named Lois, who has SCANNER1 installed locally, connects to a remote desktop or published application, her scanner is renamed to "SCANNER1 for Lois by RAS".

To change the pattern used to rename scanners, specify a new pattern in the **Scanner rename pattern** input field. The variables that you can use for renaming are:

- `%SCANNERNAME%` — client side scanner name.
- `%USERNAME%` — username of the user connected to the server.
- `%SESSIONID%` — ID of the active session.

You can configure a different renaming pattern specifically for each server in the list.

> **Note:** Redirected scanners are only accessible by administrator and the user who redirected the scanner.

Enabling and Disabling Universal Scanning Support

To enable or disable the WIA or Twain Universal Scanning support for a particular server, click the **WIA** tab or the **TWAIN** tab, then right-click a server and click **Enable** or **Disable** in the context menu.

Managing Scanning Applications

Adding a Scanning Application

TWAIN applications that will use the Universal Scanning feature have to be added in the TWAIN tab by selecting the **TWAIN Applications** button so they can use the Twain driver, hence making it easier for the administrator to set them up.

To add an application to the list of scanning applications:

1. With the **Universal Scanning** category selected in the RAS Console, click the **TWAIN** tab.
2. Click the **Twain Applications** button (below the **Servers in Site** list) and then click **Add**.
3. In the **TWAIN Applications** dialog, click **Tasks** > **Add** and browse for the application executable. Select the executable and click **Open**.

> **Note:** Some applications might use different or multiple executables. Make sure that all required executables are added to the list of scanning applications.

Deleting a Scanning Application

To delete a scanning application from the list, highlight it and click **Tasks** > **Delete**.

> **Note:** If you delete an application from the list, the installation of the application will not be affected.

You can also specify a universal scanning compression policy. For more info see **Client Policies** > **Experience** (p. 197).

CHAPTER 16

User Device Management

This chapter describes tasks that a Parallels RAS administrator can perform to manage user devices, such as desktop computers and phones or tablets.

In This Chapter

Inviting Users to Connect to Parallels RAS

Parallels Remote Application Server supports multiple platforms, ranging from desktop PCs and Macs to mobile devices and ChromeApps. The Invitation Email feature is designed to reduce the complexities involved in the installation and client rollout process. This feature allows the administrator to send client installation and auto-configuration instructions to end users right from the RAS Console.

Quickly Sending an Invitation Email to Users

You can quickly send an invitation email to users from the **Start** category in the RAS Console. The **Invite Users Wizard** there implements a streamlined process that requires minimal user interaction. The process is described in the **Setting Up a Simple RAS Environment** section (p. 21).

The rest of this section describes how to invite users from the **Administration** category. This process consists of more steps, but gives you more control over the available options.

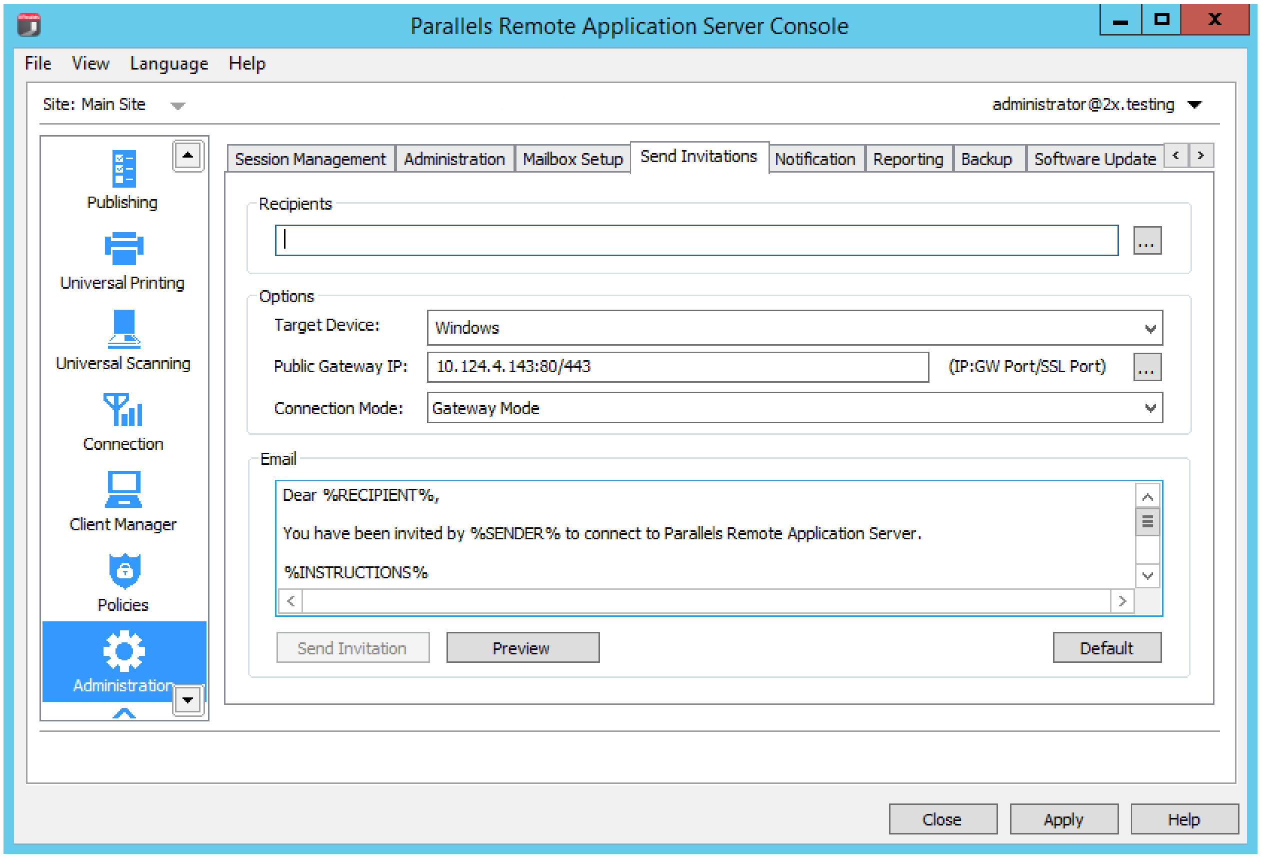
Sending an Invitation Email to Users

The preferred (and more convenient) method of sending an invitation email is from the **Start** category as described in the **Setting Up a Simple RAS Environment** section (p. 21). The functionality described here is another way of doing it, so you can choose whichever method you like best.

Before proceeding, first confirm you have correctly configured the mailbox as described in **Configuring SMTP Server Connection for System Notifications via Email** (p. 235).

To send an invitation email:

1 In the RAS Console, select the **Administration** category and then click the **Send Invitations** tab in the right pane.



Target Device: Windows

Public Gateway IP: 10.124.4.143:80/443 (IP:GW Port/SSL Port)

Connection Mode: Gateway Mode

Dear %RECIPIENT%,

You have been invited by %SENDER% to connect to Parallels Remote Application Server.

%INSTRUCTIONS%

2 Select recipients in the **Recipients** section. You can browse your Active Directory and simply select a user or a group.

3 In the **Target Device** drop-down list, select the platform that recipients are running. The supported platforms are:

- **Windows**
- **Mac**
- **HTML5** (HTML5 enabled browsers)
- **iOS**
- **Android**
- **ChromApp**
- **Linux**

4 In the **Public Gateway IP** field, specify the the gateway domain name or IP address. Please note that this can be a public IP address in order to reach the system from a remote user.

5 In the **Gateway Mode** drop-down list, select a gateway connection mode. Note that SSL modes require the gateway to have SSL configured.

6 The **Advanced** button is used to specify a third-party credential provider component. Click the button and specify the provider GUID. For more information, see **Configure Client Policy Options** > **Single Sign-On** (p. 200).

7 The **Email** section displays the message template that will be used to create the message. You can modify the template if you wish. The variables that can be used in the template are:

- `%RECIPIENT%` — Recipient username
- `%SENDER%` — The administrator account which the email is sent from.
- `%INSTRUCTIONS%` — Includes the automatic configuration process.
- `%MANUALINSTRUCTIONS%` — Includes the manual configuration process.

8 Upon completion, click the Preview button to preview your email message. If satisfied, click the **Send Invitation** to send the email to the specified recipients.

Monitoring Devices

Device monitoring allows you to view Windows devices connected to the system, deploy and manage Parallels Remote Application Server components on managed Windows devices, configure Parallels Client installed on a Windows device, and perform other monitoring tasks.

To monitor Windows devices, select the **Client Manager** category in the RAS Console.

Device States

Devices that connect to the Parallels Remote Application Server can have any of the following states:

- **Off**: Device is switched off.
- **Booting**: Device is booting.
- **Installing**: Device is installing.
- **Connected**: Device is connected.
- **Logged On**: Devices is logged on to the system.
- **Restarting**: Device is restarting.
- **Standalone**: Device has previously connected to the Parallels Remote Application Server but is not using Parallels Client, therefore it cannot be managed.
- **Needs Approval**: Device needs approval to connect to the Parallels Remote Application Server.

- **Deny**: Device has been denied access to the Parallels Remote Application Server.
- **Not Support**: Device is not supported by the Parallels Remote Application Server.
- **Error**: Device is experiencing errors.
- **Foreign Managed**: Connecting to the farm but managed by a different farm.
- **Not Manageable**: Client not manageable due to incompatible client version or uninstalled component.

Managing Windows Devices

The Client Manager feature allows the administrator to convert Windows devices running Windows XP up to Windows 10 into a thin-client-like OS. In order to be managed, Windows devices must be running the latest version of the Parallels Client for Windows.

Read the instructions below to learn how to set up Parallels Client on a Windows computer and how to enroll and manage it in Parallels RAS.

Install Parallels Client on a Windows Computer

To install and configure Parallels Client for Windows, follow the steps below. You can also read the **Parallels Client for Windows User's Guide** for the complete instructions on how to install and configure Parallels Client. Specifically, the guide provides instructions on how to install Parallels Client using an invitation email.

1. Download the Parallels Client for Windows from one of the following locations:
   - 32-bit: `http://download.parallels.com/ras/v15.5/RASClient.msi`
   - 64-bit: `http://download.parallels.com/ras/v15.5/RASClient-x64.msi`
2. Double click the `RASClient.msi` or `RASClient-x64.msi` and follow the on-screen instructions to complete the installation wizard.
3. Create a new RAS connection by clicking **File** > **Add New Connection**.
4. Select **Parallels Remote Application Server** and click **OK**.
5. Next, configure the following connection properties:
   - **Primary Connection** — Specify the Parallels Remote Application Server FQDN or IP address.
   - **User Credentials** — Enter username, password, and domain.
6. Click **OK** to create the connection and then double-click it to connect to Parallels Remote Application Server.

Upon completion, the Windows device will appear in the RAS Console (**Client Manager** / **Devices / Devices** list) and will have access to published resources.

Windows Device Enrollment

Features such as Power Off, Reboot, and Shadow require that the Windows device is managed in Parallels RAS. Windows devices can be set to be automatically managed by your farm or require that the admin approves them first.

To approve a device to be managed in Parallels Remote Application Server:

1. In the RAS Console, navigate to **Client Manager** / **Devices**.
2. Select a device on the **Devices** tab page.
3. Click **Tasks** > **Manage Device**.

The device state will change to **Pair pending** until the device reconnects. Ensure the **Client Manager Port** option is enabled for a gateway. To verify that it is:

1. Navigate to **Farm** / Site / **Gateways**.
2. Select a gateway and click **Tasks** > **Properties**.
3. Click the **Network** tab and make sure that the **Client Manager Port** option is selected

Once the Parallels Client reconnects, the enrollment process is completed and the device state is updated to **Logged On**, which indicates that it's now managed by Parallels Remote Application Server. The user running Parallels Client on their Windows PC can also see that their computer is managed by clicking **Help** > **About** on the main Parallels Client menu. The information includes the RAS Secure Client Gateway information that the Parallels Client uses to communicate with Parallels RAS.

Alternately, you can set Parallels Remote Application Server to automatically manage Windows devices. To do so:

1. In the RAS Console, select the **Client Manager** category.
2. Click the **Options** tab.
3. Enable the **Automatically manage Windows devices** option.

The administrator can now check the state of the device and perform power control actions such as Power On, Power Off, Reboot, and Logoff.

Note: Devices running older versions of Parallels Client cannot be managed and are marked as **Not Supported**.

Shadow a Windows Device

By shadowing a Windows device, you can gain full access to Windows desktop on the device, control applications running locally on the device, as well as any remote applications published from Parallels Remote Application Server.

To shadow a Windows device:

1 In the RAS Console, navigate to **Client Manager** / **Devices**.
2 Select a device and click the **Shadow** icon below the device list.

> **Note:** The Windows user will be prompted to allow the administrator to take control and can choose to deny access. The **Request Authorization** prompt can be deactivated by the administrator from **Client Manager** / **Devices** / <select Windows device> / **Tasks** > **Properties** > **Shadowing**.

Desktop Replacement

The **Replace desktop** option limits users from changing system settings or installing new applications. Replace the Windows Desktop with the Parallels Client to convert the Windows operating system into a thin-client-like OS without replacing the operating system. This way, the user can only deploy applications from the Parallels Client providing the administrator with a higher level of control over connected devices. Additionally, the Kiosk Mode limits the user from power cycling only when enabled.

To enable the **Replace desktop** feature:

1 Select a Windows device and click **Tasks** > **Properties**.
2 Click **OS Settings**.
3 Select the **Replace Desktop** option.
4 Click **OK**.

> **Note:** This feature requires an administrative password set to switch between user and admin mode on the Windows device. If **Use Group Settings** is enabled, settings are inherited from the group that the device belongs to.

Switching to Admin Mode

In User Mode, the user is restricted to use only the applications provided by the administrator. In order to change system settings, switch the device to administration mode.

Change to Admin Mode by right-clicking on the system tray icon, selecting **Switch to admin mode** and providing the password configured.

The following table outlines features that are available in the Admin Mode and the User Mode.

Feature	**User Mode**	**Admin Mode**
Parallels Client Global Options		x
Parallels Client Farm Connection Properties		x
Configuration of Local Applications		x

Ability to add a New Parallels Remote Application Server		x
Connection		
Ability to add a New Standard RDP Connection		x
Ability to Manage Standard RDP Connections and Folders		x
Display Settings	x	x
Mouse Settings	x	x
Printer Settings		x
Task Manager		x
Control Panel		x
Command Prompt		x
Windows Explorer		x
Import / Export Settings		x

Configuring Local Applications When Using the Parallels Client Desktop Replacement

With the **Replace Desktop** option enabled, the administrator’s goal should be to deploy remote applications or remote desktops and use the native OS to simply deploy the software needed to connect remotely. However, in some instances, local applications may be required. The administrator still has the ability to configure local applications to be shown within the Parallels Client Desktop Replacement, however it is necessary to switch to admin mode prior to it.

Publish a local application according to the following steps:

1 Shadow the user’s session or use the user device station directly.

2 Switch the Parallels Client Desktop Replacement to admin mode.

3 Click **File** > **Add New Application**

4 Fill in the application information

5 Applications added will be visible in the Application Launcher.

6 Switch back to user mode once all the applications needed are configured.

Windows Desktop Replacement

This section explains what happens when the **Replace Desktop** option is enabled, and why it is useful to administrators.

When enabled, the Replace Desktop feature allows the administrator to convert a standard desktop into a limited device similar to a Thin Client, without replacing the operating system.

The end user will not have access to Windows Explorer, Taskbar or any other component that usually allows them to install new applications or change system settings. The user can now only deploy applications configured within the Parallels Client. Applications can be remote applications or desktops, and locally configured applications. Local applications are allowed, so that if specific applications are needed and are not available remotely (e.g. software which communicates with specific peripherals), the user can still deploy them. When the **Replace Desktop** option is applied, the management component will do the following:

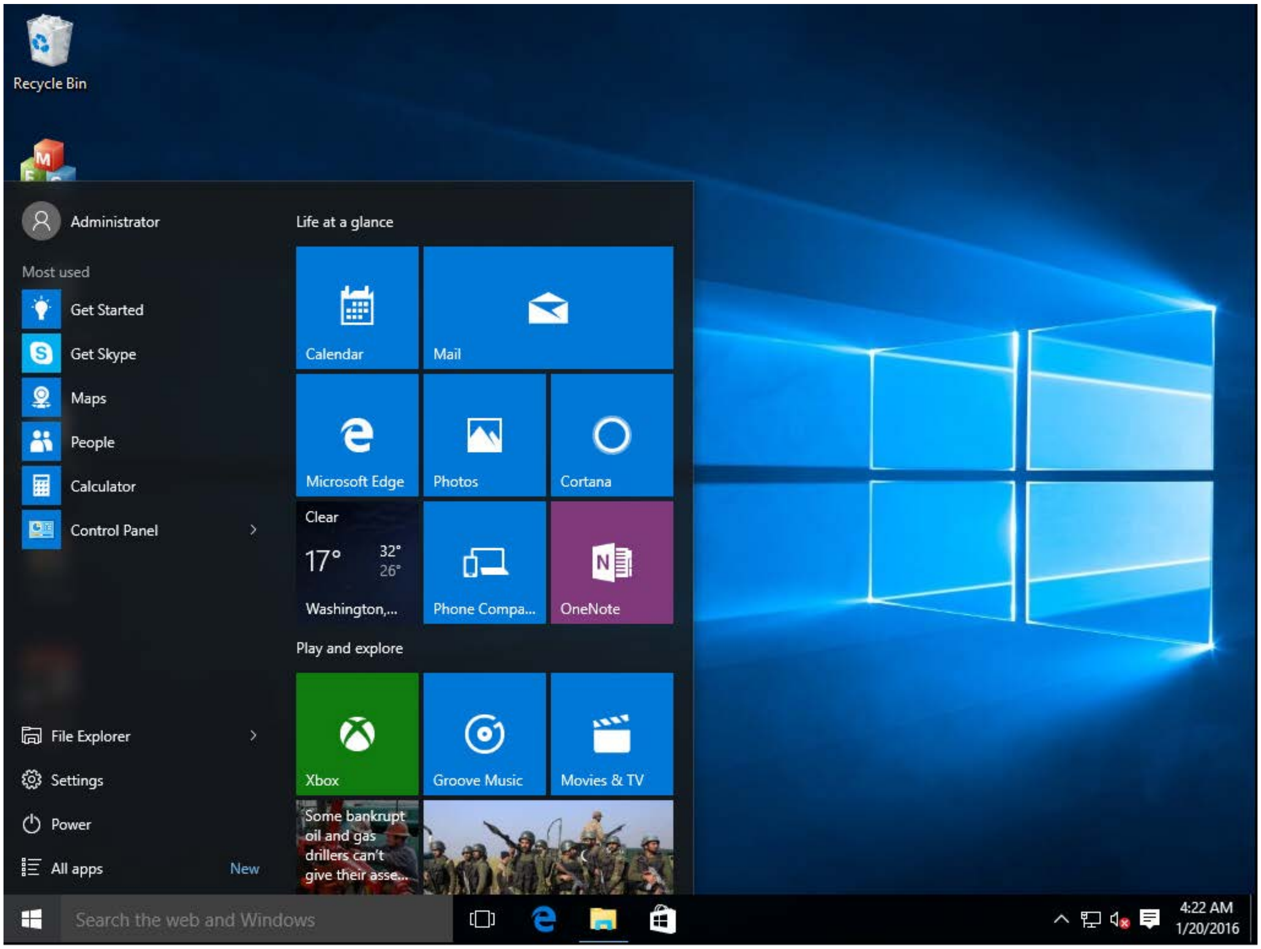
Feature	XP	Vista	7	8	8.1	10
Replace Desktop with Parallels Client	x	x	x	x	x	x
Disable Start Button	x	x	x	x	x	x
Restrict Control Panel Access	x	x	x	x	x	x
Disable Windows Key	x	x	x	x	x	x
Disable the Task Manager	x	x	x	x	x	x
Disable Quick Access Toolbar	x	x	n/a	n/a	n/a	n/a
Disable Security Manager/Action Center Notifications	x	x	x	x	x	x
Lock the Taskbar	x	x	x	x	x	x
Remove Pinned Applications	n/a	n/a	x	x	x	x
Disable Metro Screen (user logs directly to desktop)	n/a	n/a	n/a	x	x	x
Disable Hot Corners	n/a	n/a	n/a	x	x	x
Disable Charm Hints	n/a	n/a	n/a	x	x	x
Disable Help Aids	n/a	n/a	n/a	x	x	x
Disable Windows Sidebar	n/a	x	x	n/a	n/a	n/a

In this mode, the user also has access to the Mouse and Display Control Panel applets. The user cannot change the Parallels Client Global Options and the Client Farm Connection Options. Advanced management features can be enabled if the device is switched into administration mode.

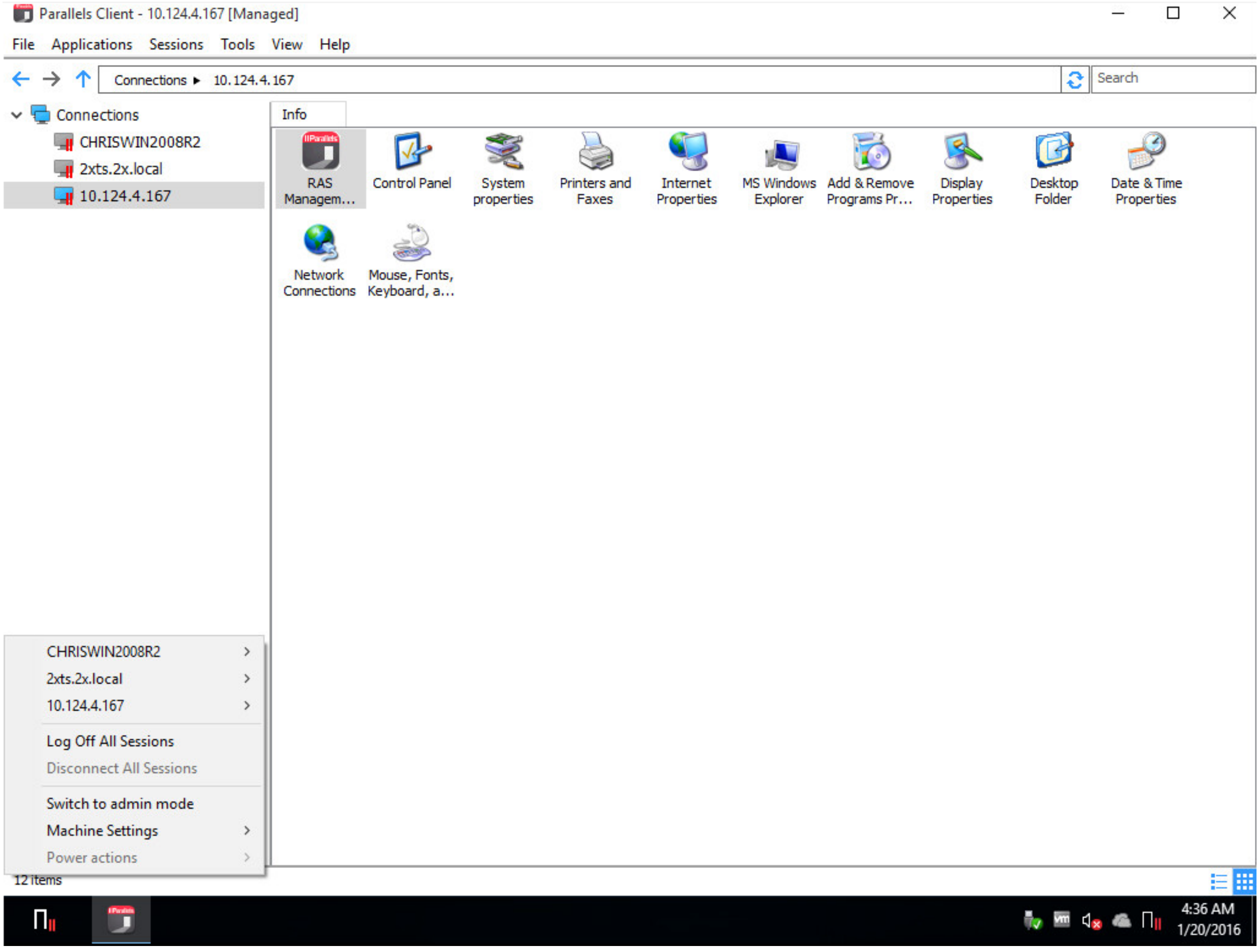
If the Windows Desktop Replacement feature is switched off, all the restrictions are removed and the standard desktop is made available to the user.

The following are the screenshots of a Windows 10 desktop before and after the **Replace Desktop** option is enabled.

Before



After



Windows Device Groups

The **Windows Device Groups** tab page (**Client Manager** category) allows you to group managed Windows devices and administer them together. When a Windows computer becomes managed, it automatically inherits settings from the default group.

Note: Specific devices within a group can be configured to override inherited settings from the group.

Creating a Windows Device Group

To create a Windows Device Group:

1 Navigate to the **Windows Devices Groups** tab in the **Client Manager** category and click **Tasks** > **Add**.

2 On the **Main** tab page, specify a group name and an optional description.

3 On the **OS Settings** tab page, select or clear the following options:

- **Disable Print Screen**. Disable the **Print Screen** key on Windows computers.
- **Replace desktop.** This feature makes a Windows computer behave like a thin client. It limits users from changing system settings or installing new applications. The administrator can add local apps (which are already installed on a computer) to the app list in addition to published resources from Parallels RAS. If you select this option, specify an administrator password in the **Admin Mode Password** field (below) to be used to switch a computer between user and admin modes.
- **Kiosk mode**. Enable the kiosk mode.This will disable power cycling functions (reboot, shutdown) on computers in the group.
- **Use client as desktop**. If this option is selected, Parallels Client will run in full screen mode. A user will not be able to minimize it. Select this option to overcome an issue with Parallels Client breaking out of the kiosk mode on Windows 8.x. The issue may manifest itself in the tile-based UI or while using the "drag to close" feature.
- **Admin Mode Password**. Specify a password to switch between user and admin modes when a Windows desktop is replaced (see **Replace desktop** above).

4 On the **Firewall Settings** tab page, add the inbound ports if necessary.

5 On the **Shadowing** tab page, select the **Request Authorization** option to prompt a Windows device user before remotely controlling their desktop. If enabled, the user can choose to decline the connection.

Adding a Windows Device to a Group

To add a Windows device to a group:

1 Navigate to the **Client Manager** / **Devices** tab page.

2 Right-click a managed Windows device and then click **Properties** in the context menu.

3 On the **Main** tab page, click the **Member of Group** drop-down list and select a group.

4 Click **OK**.

The administrator can now perform power control actions such as Power On, Power Off, Reboot, and Logoff on groups of devices.

Scheduling Windows Devices & Groups Power Cycles

The **Scheduler** tab page of the **Client Manager** category can be used to schedule automatic power operations on devices.

Adding a New Scheduler Task

To schedule a task:

1 On the **Scheduler** tab page, click **Tasks** > **Add** to open the **Device Scheduler Properties** dialog.

2 Select the **Enable this scheduled entry** option.

3 Select the action in the **Action** drop-down list. Available actions are:

- **Device Switch On**
- **Device Log Off**
- **Device Switch Off**
- **Device Reboot**
- **Device Group Switch On**
- **Device Group Log Off**
- **Device Group Switch Off**
- **Device Group Reboot**

4 Select a managed device or a group (depending on the action type that you selected) in the **Target** drop-down list.

5 Specify the task start date and time.

6 Select the **Repeat** option from the following choices:

- **Never** (a task will run only once, as specified in the **Start** and **Time** fields)
- **Every day**
- **Every week**
- **Every 2 weeks**
- **Every month**
- **Every year**

7 Specify a friendly task description in the **Description** field.

8 Click **OK** to create the task.

Managing Scheduled Tasks

To modify an existing task, right-click it in the **Schedule List** and click **Properties** in the context menu.

To enable or disable an event, right-click it, click **Properties**, and then select or clear the **Enable this scheduled entry** option.

To execute a scheduled task immediately, right-click it and click **Execute Now** in the context menu.

To delete a task, right-click it and then click **Delete**.

Managing Client Policies

The **Policies** category allows you to manage Parallels Client policies for users on the network who connect to a server in the farm. By adding client policies, you can group users and push different Parallels Client settings to user devices.

All desktop clients (Windows, Linux, macOS) are supported. On mobile devices, only the Control Settings (p. 202) are supported.

Read this section to learn how to:

- Add a new client policy (p. 192)
- Configure connection properties (p. 193)
- Configure client policy options (p. 200)
- Configure control settings (p. 202)

Add a New Client Policy

To add a new client policy:

1. On the **Policies** tab page, click the **Tasks** drop-down menu and then click **Add** (or click the **+** icon). The **Policy Properties** dialog opens.
2. The left pane contains a navigation tree allowing you to select a group of options to configure.
3. Make sure the **Policy** node is selected and then specify a policy name and an optional description.
4. In the **Browse Mode** drop-down list, select how you want to browse for users and groups. The preferred mode is **Secure Identifier** (default). Other options exist for backward compatibility.
5. In the **Tasks** drop-down menu, click **Add** (or click the plus sign icon).
6. In the **Select User and Groups** dialog, specify the target users and/or groups.

(optional) Configure criteria for the client policy

By default, a client policy applies to the configured users and groups in all situations. You can define a criteria so the policy only applies when the criteria is matched. This functionality allows you to create different policies for the same user, which will be applied depending on where the user is connecting from and from which device.

To create a new criteria:

1. In the **Policy Properties** dialog, select **Policy** in the left pane and then select the **Criteria** tab in the right pane.
2. In the **Gateway** section, select the criteria type in the first drop-down list and then specify the values (if applicable) in the second drop-down list.
3. In the **MAC Address** section, select the criteria type in the first drop-down list and then specify the values (if applicable) in the second drop-down list.

Configure Connection Properties

To configure connection properties, select the **Connection Properties** node in the left pane of the **Policy Properties** dialog. The right pane will display a number of tab pages where you can configure connection properties, including:

- Categories (p. 193)
- Connection (p. 193)
- Display (p. 195)
- Printing (p. 195)
- Scanning (p. 197)
- Local Resources (p. 197)
- Experience (p. 197)
- Network (p. 198)
- Authentication (p. 198)
- Advanced Settings (p. 198)

Categories

On the **Categories** tab page, select connection properties this policy will enforce. If a category is selected here, a user will not be able to change its settings in Parallels Client. If a category is left unchecked, the user will be able to change the corresponding settings.

Connection

The **Connection** tab page allows you specify connection properties and logon information.

Configuring the Primary Connection

The primary connection properties are grayed out because they always default to the primary RAS Secure Client Gateway. The only property that you can specify here is **Friendly Name**.

Configuring a Secondary Connection

If you have more than one RAS Secure Client Gateway, you can define a secondary connection, which will be used as a backup connection in case the primary gateway connection fails.

To add a secondary connection:

1. Click the **Secondary Connections** button.
2. In the **Secondary Connections** dialog, click the **Add** button and specify a server name or IP address. You can click the **[...]** button and select a server from the list. If none are available (or if the desired server is not in the list), type the server info in the field provided.
3. Select the connection mode and modify the port number if necessary. Click **OK**.
4. Back in the **Secondary Connections** dialog, if you have multiple secondary connections, you can move them up or down in the list. If the primary connection cannot be established, Parallels Client will use secondary connections in the order listed.
5. Click **OK**.

Configuring the Logon Information

In the **Logon** section, specify the following properties:

1. Select the **Auto Logon** option to enable Parallels Client to connect automatically without displaying the **Logon** dialog every time a user connects to a remote server.
2. In the **Authentication type** drop-down list, select the desired method of authentication:
   - **Credentials**. Select this option and then enter the username, password, and domain information. A client will be authenticated on the remote server using the specified credentials.
   - **Single Sign-On**. This option will be included in the list only if the Single Sign-On module is installed during Parallels Client installation. Select this option to use local system credentials to connect to the remote server.
   - **Smart Card**. Select this option to authenticate using a smart card. When connecting to the remote server, a user will need to insert a smart card into the card reader and then enter a PIN when prompted.

Note: The allowed authentication type(s) must be specified in the RAS Console in **Connection** / **Authentication**.

Display

The **Display** tab page allows you to configure display options.

In the **General Options** section, specify the general display properties according to your preferences.

In the **Published Applications** section, select the **Use primary monitor only** option to start published applications on the primary monitor. Other monitors connected to a user's system will not be used.

Specify the **Desktop Options** as follows:

- **Smart-sizing**. Desktop smart sizing will scale a remote desktop to fit the connection window.
- **Embed desktop in launcher**. Enable this option to access a published desktop inside Parallels Client.
- **Span desktop across all monitors**. Enable this option to span published desktops across all connected monitors.
- **Display connection bar in full screen mode**. Enable this option to show the connection bar when connecting in full screen mode.

Printing

The **Printing** tab page allows you to configure printing options.

In the **Technology** drop-down list, select the technology to use when redirecting printers to a remote computer:

- **None**. No printer redirection will be used.
- **RAS Universal Printing technology**. Select this option if you want to use RAS Universal Printing technology.
- **Microsoft Basic Printing Redirection technology**. Select this option if you want to use Microsoft Basic printing technology.
- **RAS Universal Printing and Microsoft Basic redirection technologies.** Select this option to use both Parallels RAS and Microsoft technologies.

RAS Universal Printing

If you selected **RAS Universal Printing technology**, select printers to redirect in the **Redirect Printers** drop-down list:

- **All**. All printers on the client side will be redirected.
- **Default only**. Only the default printer will be redirected.
- **Specific only**. Select the printers to redirect from the provided list. The list becomes enabled only if you select this option.

Additional options can be configured by clicking the **Options** button, which will open the **RAS Universal Printing Options** dialog.

In this dialog, you can select the data format:

- **Portable Document Format (PDF).** Adobe PDF.
- **Enhanced Meta File (EMF).** Use vector format and embedded fonts.
- **Bitmap (BMP).** Bitmap images.

You can also choose to configure printer preferences before printing:

- **Never show the preference window.** The printer preferences window will never be shown before printing.
- **Show Preference window for all printers.** The printer preferences window will be shown for all printers before printing.
- **Show the preferences window only for the following printers.** The printer preferences window will be shown for all selected printers in the list box which becomes enabled when this setting is selected.

Default printer settings

To configure default printer settings, click the **Change Default Printer settings** button.

The default printer list shows printers that can be redirected by the client to the remote computer. The list also includes the printing technology that the available printers will use. The technology reflects the setting selected in the **Technology** section. For example, if the technology was set to **RAS Universal Printing technology**, only the printers using RAS Universal Printing will be listed.

To disable the default printer, select **<none>**. To redirect the default local printer on the client side to the remote computer, select **<defaultlocalprinter>**. When **<custom printer>** is selected, you can specify a custom printer which might be installed on the remote computer. The first printer that matches the printer name inserted in the custom text box, will be set as the default printer on the remote computer.

Select **Match exact printer name** to match the name exactly as inserted in the custom text box. Please note that the remote printer name may be different than the original printer name. Also note that local printers may not redirect due to server settings or policies.

You can specify the time a printer will be forced as default. If the default printer is changed during this time after the connection is established, the printer is reset as default.

Select the **Update the remote default printer if the local default printer is changed** option to change the remote default printer automatically when the local default printer is changed. Please note that the new printer must have been previously redirected.

Scanning

On the **Scanning** tab page, you can specify a scanner that should be used when one is required by a published application.

You can set the following options on the **Scanning** tab page:

- **Use**. Allows you to select a scanning technology. RAS Universal Scanning uses TWAIN and WIA redirection allowing an application to use either technology depending on the hardware type connected to the local computer. If you select **None**, scanning will disabled.
- **Redirect Scanners**. Select scanners attached to your computer for redirection. You can select **All** (all attached scanners will be redirected) or **Specific only** (only the scanners you select in the provided list will be redirected).

Local Resources

Use the **Local Resources** tab page to configure how local resources are handled by a remote server. You can see that these are the same options that are available when using a standard remote desktop connection. The options are self-explanatory, so you can set them according to your preferences.

Experience

The **Experience** tab page allows you to tweak the connection speed to optimize the performance of the connection with the remote server. If you are connecting to a remote server on a local network that runs at 100 Mbps or higher, it is usually safe to have all of the experience options turned on.

It is also recommended to enable compression to have a more efficient connection. The following compression options are available.

Enable Compression: Enables compression for RDP connections.

Universal printing compression policy: The compression type should be selected based on your environment specifics. You can choose from the following options:

- **Compression disabled**. No compression is used.
- **Best speed (uses less CPU)**. Compression is optimized for best speed.
- **Best size (uses less network traffic)**. Compression is optimized to save network traffic.
- **Based on connection speed**. The faster the connection speed, the lower compression level and the minimum data size to compress are used.

Universal scanning compression policy: This drop-down list has the same options as the universal printing compression above. Select the compression type based on your environment specifics.

Network

Use the **Network** tab page to configure a proxy server if you have one.

Select the **Use proxy server** option and then select the protocol from the following list:

- **SOCKS4**. Enable this option to transparently use the service of a network firewall.
- **SOCKS4A**. Enable this option to allow a client that cannot connect to resolve the destination host’s name to specify it.
- **SOCKS5**. Enable this option to be able to connect using authentication.
- **HTTP 1.1**. Enable this option to connect using a standard HTTP 1.1 protocol connection.

Specify the proxy host domain name or IP address and the port number.

For SOCKS5 and HTTP 1.1 protocols, select **Proxy requires authentication** and enter user credentials.

Authentication

Use the **Authentication** tab page to specify what should happen if the server authentication fails.

In the **If authentication fails** drop-down list, select one of the following options:

- **Connect**. The user can ignore the certificate of the server and still connect.
- **Warn**. The user is alerted about the certificate and still has the ability to choose whether to connect or not.
- **Do not connect**. The user is not allowed to connect.

Advanced Settings

The Advanced **Settings** tab page allows you to customize the default behavior or Parallels Client.

You can specify the following properties:

- **Use client system colors**. Enable this option to use the client system colors instead of those specified on the remote desktop.
- **Use client system settings**. Enable this option to use the client system settings instead of those specified on the terminal server.
- **Create shortcuts configured on server**. For each published application, the administrator can configure shortcuts that can be created on the client's desktop and the Start menu. Select this option to create the shortcuts, or clear the option if you don't want to create them.
- **Register file extensions associated from the server**. For each published application, the administrator can create file extension associations. Use this option to either register the associated file extensions or not.

- **Redirect URLs to this computer**. Enable this option to use the local web browser when opening 'http:" links.
- **Redirect Mail to this computer**. Enable this option to use the local mail client when opening 'mailto:' links.
- **Always ask for credentials when starting applications**. If this option is enabled, the user will be prompted to enter their credentials when starting applications.
- **Allow Server to send commands to be executed by client**. Enable this option to allow commands being received from the server to be executed by the client.
- **Confirm Server commands before executing them**. If this option is enabled, a message is displayed on the client to confirm any commands before they are executed from the server.
- **Network Level Authentication**. Check this option to enable network level authentication, which will require the client to authenticate before connecting to the server.
- **Redirect POS devices**. Enables the Point of Service (POS) devices such as bar code scanners or magnetic readers that are attached to the local computer to be used in the remote connection.
- **Use Pre Windows 2000 login format**. If this option is selected, it allows you to use legacy (pre-Windows 2000) login format.
- **Disable RDP-UDP for gateway connections**. Disables RDP UDP data tunneling on the client side. You can use this option when some clients experience random disconnects when RDP UDP data tunneling is enabled on the RAS Secure Client Gateway (the **Network** tab page in the gateway **Properties** dialog), while other clients are not.

Connection Advanced Settings

Click the **Connection Advanced Settings** button to configure the following settings:

- **Connection Timeout**. This is the amount of time the client will try to connect to the Parallels Remote Application Server until the connection is aborted. While the connection is being established, the connection banner will be shown.
- **Show Connection Banner if connection is not established within**. Specifies the time period in seconds after which the connection banner will be displayed.
- **Show Desktop if published application does not start within**. If a published application is not launched within the time period specified in this field, the server's desktop will be loaded. This is helpful if an error occurs on the server while launching an application. By loading the server's desktop, the error can be seen.
- **Reconnect if connection is dropped.** Select this option and set the number of **Connection Retries**. If a connection is dropped, the Parallels Client will automatically try to reconnect.
- **Override computer name**. Specifies the name that your computer will use during a remote desktop session. If set, this will override the default computer name. Any filtering set by the administrator on the server side will make use of the **Override computer name**.

Configure Client Policy Options

To configure connection options, select the **Options** node in the left pane. Use the tab pages in the right pane to set the options.

General

On the **General** tab page, specify the following options:

- **Connection Banner**. Select a banner to display while establishing a connection.
- **Automatically refresh connected RAS connections every [ ] minutes**. Select this option and specify the time interval to automatically refresh a connection. This will refresh the published resources list in Parallels Client.
- **Check for updates on startup**. [Parallels Client for Windows only] Select this option and specify an update URL if you want Parallels Client for Windows to check for updates when it starts. The URL can point to the Parallels website or you can store updates on your local network and use this local URL. For the information on how to configure a local update server, please read http://kb.parallels.com/en/123658.

  Note: Parallels Client for Mac can be updated only from the App Store. Parallels Client for Linux does not support this feature.

Single Sign-On

Parallels Client for Windows comes with its own SSO component that you can install and use to sign in to Parallels RAS. However, if you already use a third-party credential provider component on your Windows computers, you need to configure Parallels RAS and Parallels Client to use the Parallels RAS SSO component to function as a wrapper for the third-party credential provider component.

Note: In order to use a third-party component, you must still install Parallels SSO component on Windows computers. After you complete the configuration steps described below, the Parallels SSO component will be used by Parallels Client as a wrapper over the credentials provider component that you use.

To specify a third-party component, select the **Force to wrap third party credential provider componen**t option and specify the component's GUID in the provided field. You can obtain the GUID in Parallels Client as follows:

1. Install Parallels Client on a computer that has the third-party component installed.
2. In Parallels Client, navigating to **Tools** > **Options** > **Single Sign-On** (tab page).
3. Select the "Force to wrap..." option and then select your provider in the drop-down list.
4. Click the **Copy GUID to Clipboard** button to obtain the component's GUID.

You will also need to specify the component's GUID when setting up an invitation email in the RAS Console. To do so:

1 In the RAS Console, navigate to **Administration** > **Send Invitations**.

2 Click the **Advanced** button. In the dialog that opens, select the "Force to wrap..." option and specify the GUID of the component.

After the policies are applied on Windows computers, Parallels Client will be automatically configured to use the specified third-party credentials provider.

Advanced Settings

On the **Advanced Settings** tab page, you can specify a language that Parallels Client should use. The **Default** option will use the main language set in the client's operating system. The list box contains advanced Parallels Client properties that you can set according to your preferences. The properties are:

- **Hide Launcher when application is launched**. If this option is enabled, the launcher will be minimized in the system tray after an application is launched.
- **Always on Top.** With this feature enabled, other applications will no longer mask the launcher.
- **Do not warn if server certificate is not verified.** When connected over SSL, and the certificate is not verified, a warning message will be displayed. You can disable this warning message by enabling this option.
- **Show folders page.** Enabling this option will show the available folders while showing the hierarchy of the application groups as configured on the server.
- **Minimize to tray on close or escape.** Enable this feature to place the Parallels Client into the System Tray when you click on the **Close** button or hit escape.
- **Launch automatically at Windows startup.** This option will place a shortcut in the start menu folder of the client and the Parallels Client will launch automatically on Windows startup.
- **Add RAS Connection automatically when starting web or shortcuts items**. This option will add the connection preferences in the Parallels Client when starting an item contained in a connection that is not yet listed.
- **Don't show prompt message for auto add RAS Connections.** Enable this option to disable prompt messages when adding auto connections.
- **Clear session cookies on exit.** When a user logs on, a Parallels Remote Application Server logon cookie is kept on the client side. This will allow the user to connect again with Remote Application Server without re-authenticating. Check this option to delete any cookies when the user closes the Parallels Client.
- **Close error messages automatically.** When a session disconnects because of an error, the error is automatically dismissed after 15 seconds.
- **Show SSL icon indicator on taskbar tray.** When a session connects using SSL, an icon is added on the taskbar tray. Double-click on the icon and you will see your certificate information.

- **Automatic fonts installed** (administrators only)**.** If automatic fonts are installed on the server, they will be available when a session connects.
- **Swap Mouse Buttons.** When enabling this setting, the mouse buttons will be swapped on the remote computer.
- **Redirect vendor paper sizes for RAS Universal Printing.** When enabling this setting, non-standard paper sizes which are not included in the standard options will be redirected to the client. Sizes may vary depending on the vendor.
- **Raw printing support.** When enabling this setting, printing will still work for applications sending data in RAW format.
- **Convert non distributable fonts data to images**. During RAS Universal Printing, if a document includes non-distributable fonts, each page is converted to an image.
- **Cache printers hardware information**. Caching of printer hardware information locally to speed-up RAS universal printer redirection.
- **Cache RAS Universal Printing embedded fonts**. Caching of embedded fonts locally to speed-up RAS universal printing process time.
- **DPI aware**. This will force a published application to be DPI-aware depending on the client's DPI settings. This feature works on Windows 8.1 or higher.
- **Refresh printer hardware information every 30 days**. Forces the printer hardware information cache update even if nothing has changed in 30 days. When this option is off, the cache will only be refreshed if there were known changes.

Configure Control Settings

Configure Control Settings

The **Control Settings** options allow you to control various actions on the client side. These options affect the following Parallels Clients:

- Windows
- Linux
- Mac
- Android
- iOS
- Windows Phone

To configure control settings:

1. Select the **Control Settings** node in the left pane.
2. On the **Connections** tab page, select (or clear) the following options:
   - **Do NOT add RAS connections**. When a user presses the **Add Connection** button, an RDP connection is immediately created.

- **Do NOT add Standard RDP connections**. When a user presses the **Add Connection** button, a RAS connection is immediately created

3 On the **Password** tab page, specify the following options:

- **Do NOT save password**. Option to save the password will not be shown to the user for that particular connection. Password is never saved on a disk, but kept in memory until the user closes the application.
- **Do NOT change password**. Option to change the password will not be shown in the context menu for that particular connection.

4 On the **Import and Export** tab page:

- **Do NOT import/export setting**. The **Import** and **Export** buttons will not be shown to the user.

When done configuring client policies, click **OK** to save the changes and close the **Policy Properties** dialog.

To modify an existing client policy, right-click it and select **Properties** in the context menu.

CHAPTER 17

RAS Reporting

This chapter described reporting options included in Parallels Remote Application Server. It explains how to configure Parallels RAS reporting features and how to use them.

In This Chapter

Deploy and Configure RAS Reports

To use the reporting functionality, you need to install and configure MS SQL Server and the RAS Reporting Service. Before doing so, first check whether your server complies with the prerequisites outlined below. Once confirmed, proceed with the installation and configuration process.

Environment Requirements

1. A machine running Windows Server 2008, Windows Server 2008 R2, Windows Server 2012 or Windows Server 2012 R2
2. To view RAS reports, a default AD user account will be created by the RAS Reporting installation process. The account name is `RASREPORTINGVIEW`. You can specify a different user during the RAS Reporting setup if you wish.
3. Microsoft SQL Server 2008 SP1, Microsoft SQL Server 2008 R2 SP1 or Microsoft SQL Server 2012 installed on a server running Parallels RAS or a dedicated server.

SQL Server Configuration Requirements

1. SQL Server features installed: Database Engine Services, Reporting Services: Native, Management Tools.
2. SQL Server Named Instance: the default name that the RAS Reporting installer uses is RASREPORTING, Instance ID: RASREPORTING. You can specify a different name during the RAS Reporting setup if you wish.
3. SQL Server Administrators - SA (System Administrator), AD Administrator, System User.
4. SQL Server Reporting Services (SSRS) port set to 8085.

For the full step-by-step recommended Microsoft SQL Server installation and configuration, please read the following KB article: http://kb.parallels.com/en/123083

> **Note:** For installations running on a multi-server farm environment, it is recommended that Microsoft SQL Server is installed on a dedicated machine.

Installing RAS Reporting

Log in to the machine running MS SQL Server with an account that has administrative privileges (AD).

1. Download the latest version of the RAS Reporting setup from `http://download.parallels.com/ras/v15.5/RASReporting.msi`
2. Double-click `RASReporting.msi` to run the installation wizard.
3. Click **Next** when prompted.
4. Review and approve the end-user license agreement and click **Next**.
5. Specify the target folder for the installation and click **Next**.
6. Specify the SQL Server named instance name. The default instance is RASREPORTING. If you would like to use a different instance, you can specify it on this page. If the instance doesn't exist, you need to create it first.
7. Specify the user who will be allowed to view reports. The default user is RASREPORTINGVIEW. If you would like to use a different user, you can specify it on this page. If the user doesn't exist, you need to create it first.
8. Click **Install.**
9. When the installation is complete, click **Finish**.

Configure Reporting in the RAS Console

To configure RAS Reporting:

1. Select the **Administration** category in the RAS Console and then click the **Reporting** tab in the right pane.
2. On the **Reporting** tab page, specify the following options:
   - Select the **Enable RAS Reporting** option to enable the RAS reporting functionality.
   - **Server**. Specify the IP address of the server hosting your SQL Server database where the Reporting service is installed.
   - **Port**. Specify the port used to communicate with the Reporting service.
   - **Prompt user for Login Details**. Will prompt the user for AD credentials when generating reports.

- **Use following credentials**. Specify AD username and password to be used each time a report is generated. The default user name is `RASREPORTINGVIEW`. If you specified a different user when you installed the RAS Reporting module, you can use that user name.

3 When done, click the **Test Connection** button to test the configuration.

4 Click **Apply** to commit the configuration.

Advanced Settings

Advanced settings allow the administrator to fine tune the data collected by the reporting service and define for how long this data is retained before purged.

To access the reporting advanced options:

In the RAS Console, navigate to **Administration** / **Reporting.** On the **Reporting** tab page, click the **Tracking Settings** button. The **Advanced Setting** dialog opens.

In the **Session Information** section, configure the following options:

- **Enable Tracking**. Records sessions data (affects all reports except Server Reports).
- **Retain information for**. Specify the period session information is retained for before purged.

In the **Server Counters** Information section, configure the following:

- **Enable Tracking**. Records server counter data (affects Server Reports only).
- **Retain information for**. Specify the period server counters information is retained for before purged.
- **Track CPU / Memory counter when change is more than**. Set the minimum CPU/Memory resource usage required to record data.

RAS Reports

The RAS Reporting functionality includes 14 predefined reports in 5 groups:

1 **User Reports**. This group provides insight into how end users are interacting with Parallels RAS and includes the following reports:

- User activity - shows all sessions produced by all users in the system. Report includes information about each session; active time, idle time and disconnected time.
- User session activity - shows all sessions produced by a single user. Report includes information about each session; active time, idle time and disconnected time.
- Devices used by user - shows information about the devices being used by a user. Report includes information such as; device vendor, device model and total time used.
- Client operating system used by user - shows the operating system being used by a particular user; operating system, total time used.

2 **Group Reports.** This group provides information about how groups of users are interacting with Parallels RAS and includes the following reports:

- Groups activity - shows all sessions produced by all groups in the system. Report includes information such as; active, idle and disconnected time.
- Group sessions activity - shows all sessions produced by a group in the system. Report includes information about each session produced by each user in the group such as; start, end, active, idle, disconnect and total time.
- Devices used by group - shows information about the devices being used by users that are members of a particular group. Report includes information such as; device vendor, model and total time used.
- Client operating system used by the group - shows the operating system being used by members of a particular group; operating system and total time used.

3 **Devices Reports**. This group provides information about the devices that are connecting to Parallels RAS and includes the following reports:

- Devices used - shows all devices using the system. Report includes information such as; manufacturer, model and the number of sessions opened by the device.
- Client operating system used - shows devices and corresponding operating systems that are using the system. Report includes information such as; device model, operating system and amount of devices.
- RDP version used - shows the Parallels Client version , the device using that version and how many of those devices are being used.

4 **Server Reports**. This group provides information about activity about the Parallels RAS server components and includes the following reports:

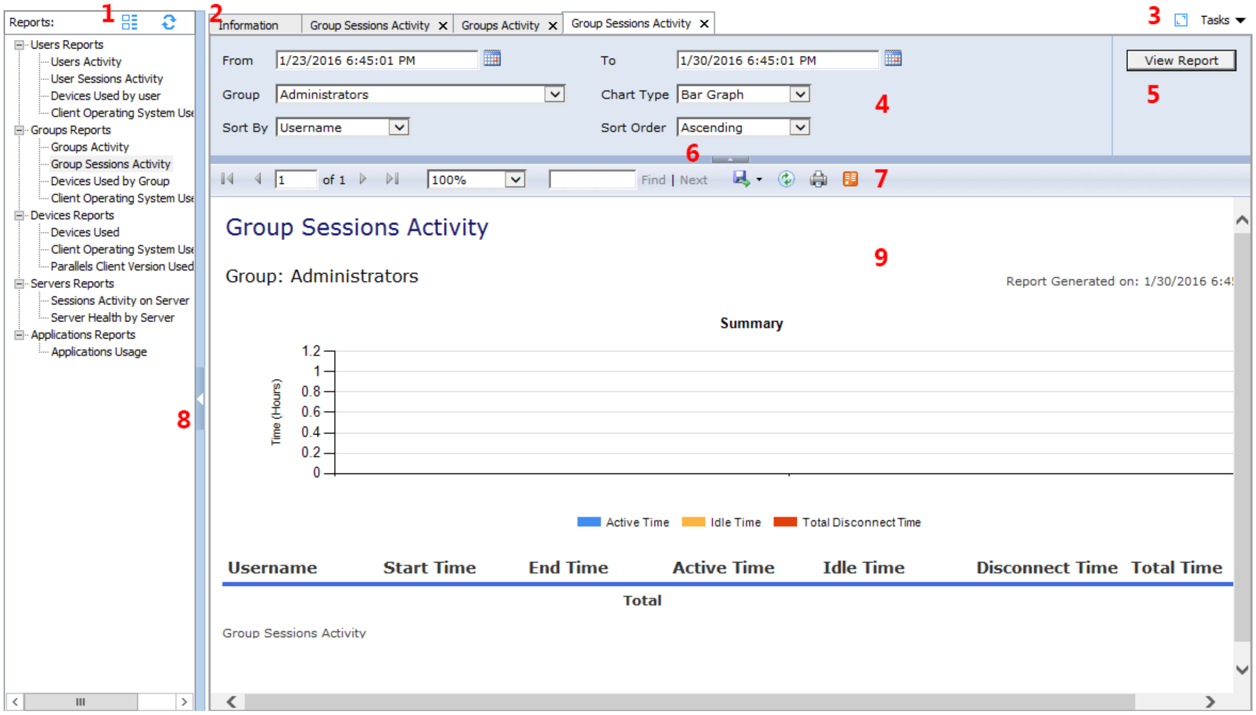
- Sessions activity on server - shows the session activity of users on a particular server. Report includes information such as; start, end, active, idle and disconnect time.
- Server health by server - shows server CPU and RAM usage for a particular server in a graph.

5 **Application Reports**. This group provides information about the applications used with Parallels RAS and includes the following report:

- Applications usage - shows information about the applications used in the system. Report includes information such as; application name, number of times used and the total time the application was used for.

Note: The first time the reports are viewed, you may be requested to add http://<server domain/ IP> as a trusted website. This will appear depending on the Parallels RAS machine’s "Internet Explorer Enhanced Security Configuration".

To use RAS Reporting, select the **Reporting** category in the RAS Console.



From 1/23/2016 6:45:01 PM

To 1/30/2016 6:45:01 PM

Group Administrators

Chart Type Bar Graph

Sort By Username

Sort Order Ascending

1 of 1 100%

Group Sessions Activity

Group: Administrators

Report Generated on: 1/30/2016 6:4

Username	Start Time	End Time	Active Time	Idle Time	Disconnect Time	Total Time
			Total			

Group Sessions Activity

The reporting interface consists of useful tools which are split into sections as described below:

1 Remove group nodes and refresh the list of reports available below.

2 Reports generated are retained as tabs shown in this section. Click a tab to review the report generated and even cancel a tab to close a report.

3 The blue button expands the reporting interface into full screen, while the **Tasks** drop-down menu allows you to apply the following actions to reports: **Duplicate**, **Full screen**, **Close report**, **Close other reports**, **Close reports on the right**, and **Close all reports**.

4 This section lists the arguments available to apply constraints to reports such as the time frame the report will cover and chart type. These change depending on the report selected.

5 The **View Report** button applies the constraints set in the section 4 to generate the report.

6 Click this arrow to collapse sections 4 and 5.

7 From this section, refresh the report, print the report, export the report to a data feed, or save the report in any of the following formats; XML, CSV, PDF MHTML, TIFF and Word.

8 Click this arrow to collapse the reports listing.

9 This section displays the new report dialog or old report selected in section 2.

Note: Parallels RAS reporting requires MS SQL Server and the Reporting Service installed and configured.

CHAPTER 18

Connection and Authentication Settings

A Parallels RAS administrator has the ability to customize how users connect to Parallels RAS. This chapter describes connection and authentication settings that can be configured according to your organization requirements. It then explains how to use second level authentication for even higher level of security.

In This Chapter

RAS Publishing Agent Connection Settings

RAS Publishing Agent connection settings can be accessed from the **Connection** category.

Follow the instruction below to configure RAS Publishing Agent connection settings.

Choosing Authentication Type

In the **Authentication Type** drop-down list, select one of the following options:

- **Username/Password**. The user credentials are validated by the Windows system on which RAS is running. The credentials used for Windows authentication are also used to log into an RDP session.
- **Smart Card**. Uses smart card authentication. Similar to Windows authentication, smart card credentials can be shared between both RAS and RDP. Hence, smart card credentials only need to be entered once. Unlike Windows authentication, the user only needs to know the smart card's PIN. The username is obtained automatically from the smart card, so the user doesn't need to provide it.
- **Username/Password or Smart Card**. Uses both Windows and smart card authentication.

Note that if smart card authentication is disabled, RAS Publishing Agent will not hook the Local Security Authority Subsystem Service (LSASS).

Smart card support is available on Windows Server 2008, 2008 R2, 2012, 2012 R2.

Smart card authentication can be used in Parallels Client for Windows and Parallels Client for Linux.

Enforcing Authentication

By default, all users are required to authenticate the connection against Parallels Remote Application Server before even viewing the list of the available published applications or desktops. By disabling the option **Always require user credentials for application list** on the **Authentication** tab page you can allow users to see the list of published resources without being authenticated. As a result, the user will be able to see the list, but as soon as the user tries to open an application or a desktop, the server will ask to supply credentials.

Configuring Authentication

Once authentication is enforced, you can configure the Parallels Remote Application Server to authenticate users against a specific domain by entering the domain name in the **Domain** input field.

Note: If the **Use client domain if specified** option is cleared, the domain name specified by the administrator will be automatically populated in the Parallels Client.

Recommendation: After changing the domain names or some other authentication related changes, click the **Clear cached session IDs** button.

- **Force clients to use NetBIOS credentials**. If this option is enabled, the Parallels Client will replace the username with the NetBIOS username.
- **Declare session idle after**. This option affects reporting statistics, whereby a session is declared idle after the amount of time specified without any activity.
- **Cached Session Timeout**. Specify the amount of time that a session is cached for (higher amount of time reduces AD transactions).
- **Authenticating Against Multiple Domains**. If the users connecting to the Parallels Remote Application Server are stored in different domains within a forest, select the **All Trusted Domains** option.

Authenticating Against Non Domain Users

In order to authenticate users sessions against users specified on a standalone machine you must enter the [workgroup_name] / [machine_name] instead of the domain name. For example if you would like to authenticate users against a list of local users on a machine called SERVER1 that is a member of the workgroup WORKGROUP, enter the following in the domain field: WORKGROUP/SERVER1.

Restricting Access by Parallels Client Type and Build Number

You can specify a minimum requirement for the Parallels Client type and version number in order for it to access the system. If a Parallels Client type is excluded or if its version is lower than the specified minimum, the device on which the Parallels Client is installed will be denied access.

To specify the Parallels Client version requirement:

1 In the RAS Console, select the **Connection** category and click the **Allowed Devices** tab.

2 In the **Mode** drop-down list, select from the following options:

- **Allow all clients to connect to the system**. No restrictions. All Parallels Client types and versions are allowed access.
- **Allow only the selected clients to connect to the system**. Select this option and then select the desired Parallels Client types in the **Clients** list. To set the **Minimum build** value, right-click the client type and then click **Properties** in the context menu.
- **Allow only the selected clients to list the published items**. Select this option and then select the desired Parallels Client types in the **Clients** list. To set the **Minimum build** value, right-click the client type and then click **Properties** in the context menu.

If a Parallels Client trying to connect to the system doesn't satisfy the requirements, the device user will receive an error and will be advised to contact the system administrator.

Second Level Authentication

Parallels RAS allows you to use two-factor authentication for access control by configuring a second level authentication.

When second level authentication is used, users will have to authenticate through two successive stages to get the application list. While the first level authentication will always use native authentication (Active Directory / LDAP), the second level can use one of the following:

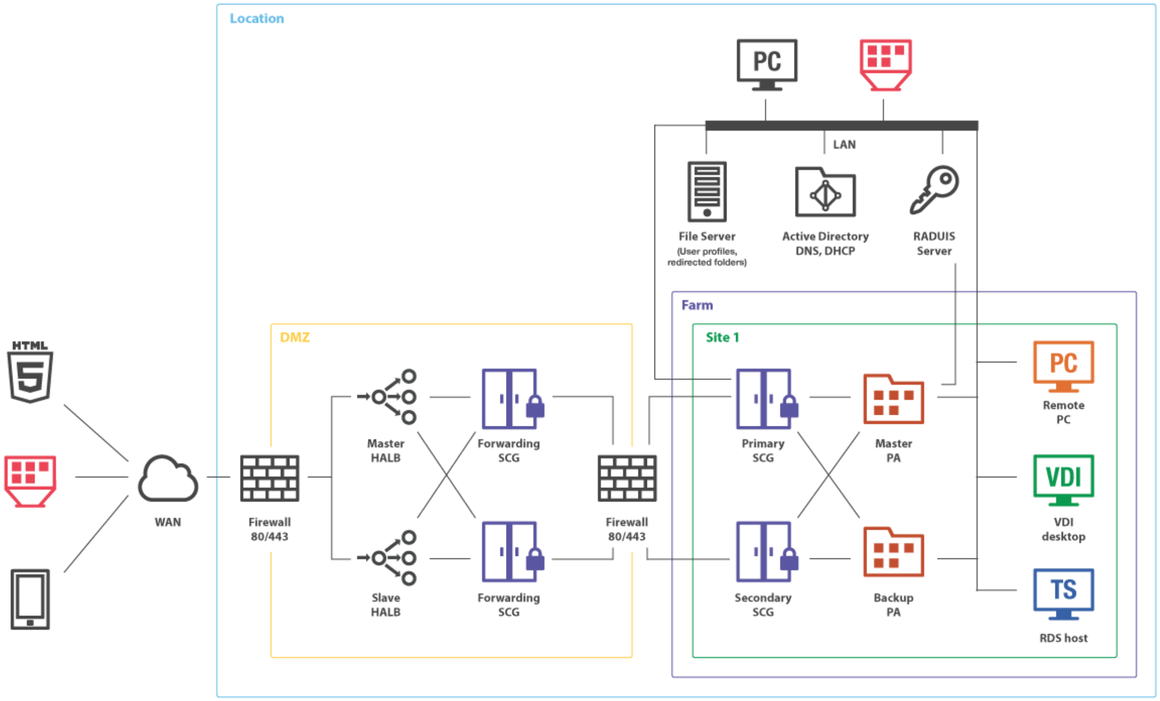
- RADIUS (p. 212)
- SafeNet (p. 213)
- Deepnet

Second level of authentication is more secure because instead of using a standard username and password, it uses a static username and a one-time password generated by a token.

Second Level Authentication can be configured from the **Second Level Authentication** tab in the **Connection** category.

Using RADIUS

The below diagram shows a typical Parallels Remote Application Server scenario with Parallels Publishing agent connected to a Radius server.



To configure Radius properties:

1. In the Parallels RAS Console, navigate to the **Connection** > **Second Level Authentication** tab.
2. In the **Provider** drop-down list, select **Radius**.
3. Click the **Settings** button. The **Radius Properties** dialog opens.
4. In the **Server** field, enter the hostname or IP address of the Radius Server.
5. In the **Port** field, enter the port number for the Radius Server.
6. In the **Timeout** field, specify the packet timeout in seconds.
7. In the **Retries** field, specify the number of retries when attempting to establish a connection.
8. Type the **Secret Key** and specify the **Password Encoding**, either PAP (Password Authentication Protocol) or CHAP (Challenge Handshake Authentication Protocol), according to the setting specified on the Radius Server.

9 Click **OK** when done.

10 Click the **Check connection** button to validate the connection. If the connection is configured correctly, you will see a confirmation message.

11 If your Radius vendor requires specific attributes, click the **Attribute** tab and then select **Add**.

12 In the **Vendor** drop-down list, select the vendor.

13 In the Attribute list, select the vendor attribute.

14 In the **Value** field, enter the value for the selected attribute type (numeric, string, IP address, date, etc).

Using SafeNet

SafeNet Token Management System provides a high-value of protection via secure tokens which makes it a perfect tool for second-level authentication in Parallels Remote Application Server.

In this section:

- Configuring SafeNet (p. 213)
- Configure Parallels RAS Web Portal for SafeNet (p. 215)

Configuring SafeNet

To configure SafeNet:

1 In the Parallels Remote Application Server console, navigate to the **Connection** / **Second Level Authentication** tab.

2 In the **Provider** drop-down list, select **SafeNet**.

3 Click the **Settings** button. The **SafeNet Properties** dialog opens.

4 On the **Connection** tab page, enter the valid URL into the **OTP Service URL** field. To verify that the connection with the OTP Service can be established, click the **Check connection** button.

> **Note:** RAS Publishing Agent communicates with the SafeNet Token Management System Server. It is highly recommended to have this behind a firewall for security reasons.

5 Click the **Authentication** tab.

6 In the **Mode** drop-down list, select how you want your users to be authenticated.

Mandatory for all users: Every user using the system must login using two-factor authentication.

The available modes are:

- **Create token for Domain Authenticated Users**: Allows Parallels Remote Application Server to automatically create software tokens for Domain Authenticated Users. Choose a token type from the drop down list. Note that this option only works with software tokens.

- **Use only for users with a SafeNet account**: Allows users that do not have a SafeNet account to use the system without having to login using two-factor authentication.

7 In the **TMS Web API URL** field, enter the location of the SafeNet API URL.

8 In the **User Repository** field, enter the user repository destination.

9 Click **OK** to save the values and close the **SafeNet Properties** dialog.

Configure Exclusion Rules

On the **Second Level Authentication** tab page, specify the exclusion rules in the **Exclusion** section.

To exclude a user or a group from second-level authentication:

1 Select the **User/Group exclude list** option and click **Configure**.

2 Click the **Add** button and select users and groups to exclude from second-level authentication.

To exclude a client IP address or IP address range from second-level authentication:

1 Select the **Client IP exclude list** option and click **Configure**.

2 Click the **Add** button and specify a single IP address or an IP address range.

3 Click **OK** and then **OK** again to save the changes and close the dialogs.

To exclude a client MAC address:

1 Select the **Client MAC Exclude** option and click **Configure**.

2 Click the **Add** button and select a client MAC address from the list. You can also specify a MAC address range using double question marks as a wildcard in any part of the address. For example, 00-14-22-01-23-??, 00-14-22-01-??-??, or 00-14-22-??-??-??.

To exclude gateway IP addresses:

1 Select the **Connection to the following Gateway IPs** option.

2 Type a gateway IP address or expand the drop-down list and select one or more IP addresses from the list. Click the plus sign icon to add the available gateways to the list.

3 Click **OK** to save the selection close the dialog. The IP addresses will appear in the **Connection to the following Gateway IPs** edit box.

Parallels Client

In the **Parallels Client — New Account Info** dialog:

1 Enter any four digits in the **OTP PIN** number field (these digits will be required further on in the process).

2 Enter your email address and then click on **OK**.

3 Log into your email account and retrieve the email containing the information you will need to activate your SafeNet authentication. An example of this email is shown below.

Activation Key: YZQHoczZWw3cBCNo

Token Serial: 4F214C507612A26A

Download MobilePASS client from:
http://localhost:80/TMSService/ClientDownload/MobilePASSWin.exe

**Login with domain credentials.*

**Place the attached seed file in the same folder as the MobilePASS client.*

Enter the One-Time Password to log into the Terminal Server Connection.

Application PIN: 4089

4 Download the MobilePASS client from the URL provided in the email.

5 Enter the Activation Key found in the SafeNet email.

6 Next, input the application PIN found in the email into the **MobilePASS PIN** field.

7 Click **Generate** to generate the eToken number and then click **Copy**.

8 Combine the OTP PIN and eToken in this order: OTP + eToken.

9 Enter this value into the Parallels Client and click **OK** to log in.

Configure Parallels RAS Web Portal for SafeNet

If SafeNet second level Authentication is enabled, logging to Parallels RAS Web Portal also requires second level authentication.

1 Enter any four digits in the **OTP Pin** number field (these digits will be required further on in the process).

2 Enter your email address and then click the **Send OTP** button.

3 Log into your email account and retrieve the email containing the information you will need to activate your SafeNet authentication. An example of this email is shown below.

Activation Key: YZQHoczZWw3cBCNo

Token Serial: 4F214C507612A26A

Download MobilePASS client from:
http://localhost:80/TMSService/ClientDownload/MobilePASSWin.exe

**Login with domain credentials.*

**Place the attached seed file in the same folder as the MobilePASS client.*

Enter the One-Time Password to log into the Terminal Server Connection.

Application PIN: 4089

4 Download the MobilePASS client from the URL provided in the email.

5 Enter the Activation Key found in the SafeNet email.

6 Next, input the application PIN found in the email into the **MobilePASS PIN** field.

7 Click **Generate the eToken** number and subsequently **Copy**.

8 Combine the OTP PIN and eToken in this order: OTP + eToken.

9 Enter this value into the Parallels RAS Web Portal and click **OK** to log in.

Using Deepnet

This section describes how to configure and use Deepnet for second level authentication.

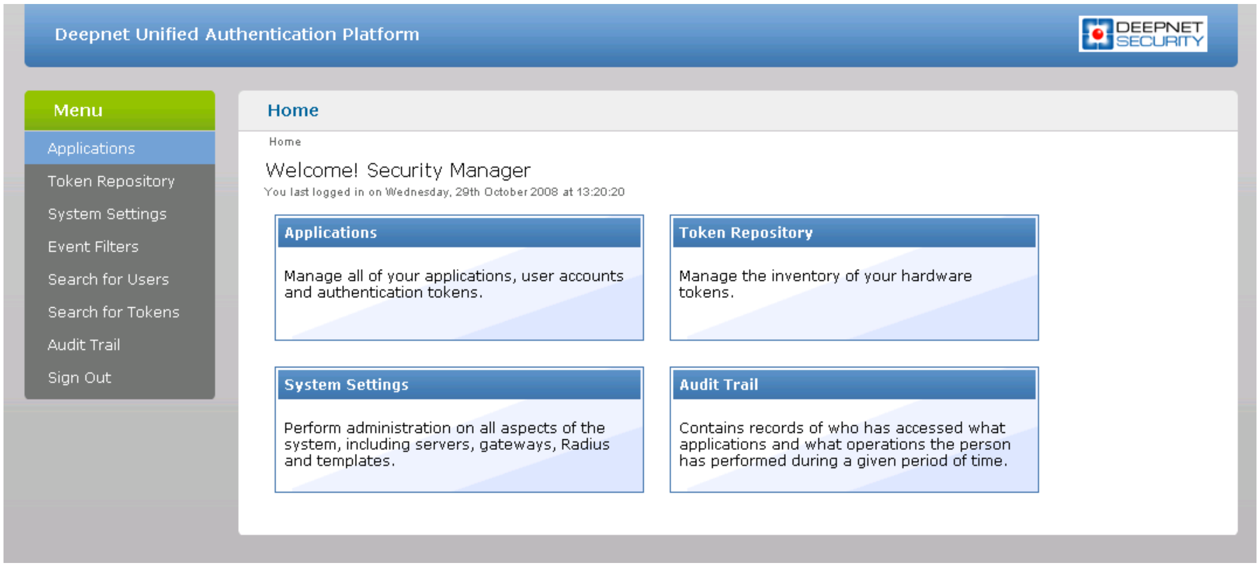
In this section:

- Configuring Deepnet (p. 216)
- Configuring Parallels RAS for Deepnet (p. 219)
- Creating User Accounts on Deepnet (p. 220)
- Connecting to a RAS Farm with Deepnet (p. 221)
- Working with DualShield (p. 222)

Configuring Deepnet

Start by logging into the machine where Deepnet Unified Authentication is installed and open your Internet browser. Since Deepnet is installed locally, use 'localhost' as the URL followed by the port number which the Deepnet server will use to communicate with your applications (ex: http://localhost:8080/).

You must then log into the Deepnet Management Console with the credentials that you had set during the installation.



Welcome! Security Manager

You last logged in on Wednesday, 29th October 2008 at 13:20:20

Applications

Manage all of your applications, user accounts and authentication tokens.

Token Repository

Manage the inventory of your hardware tokens.

System Settings

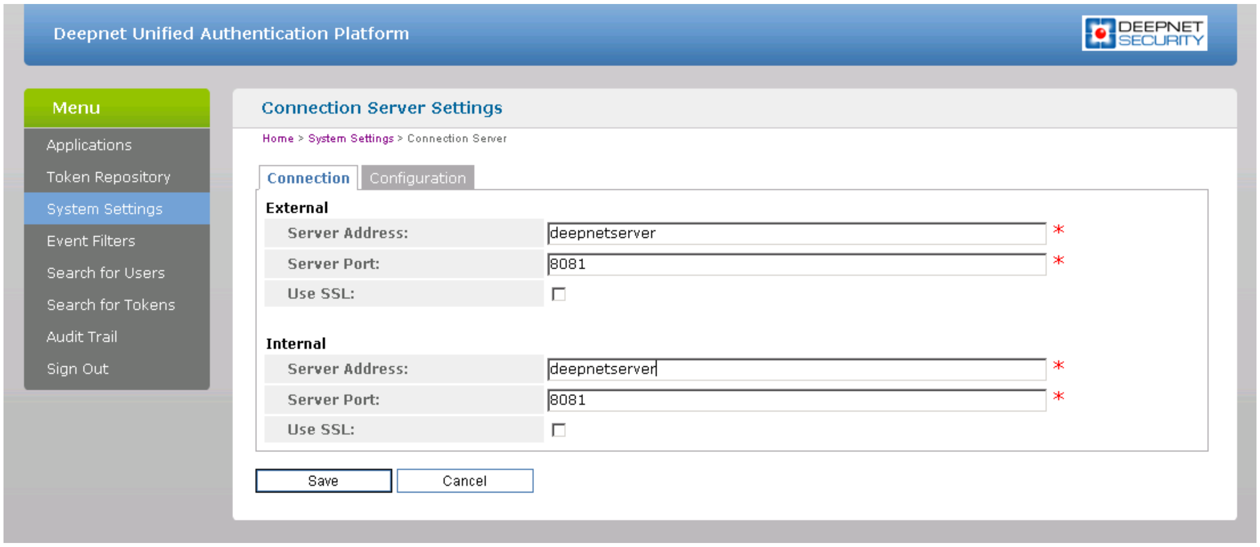
Perform administration on all aspects of the system, including servers, gateways, Radius and templates.

Audit Trail

Contains records of who has accessed what applications and what operations the person has performed during a given period of time.

Servers

Ensure that the Communication Server, Connection Server and Authentication Server are properly configured. For further information please refer to Deepnet Unified Authentication Platform Administration Guide.



Connection Server Settings

Home > System Settings > Connection Server

External

Server Address:	deepnetserver *
Server Port:	8081 *
Use SSL:	☐

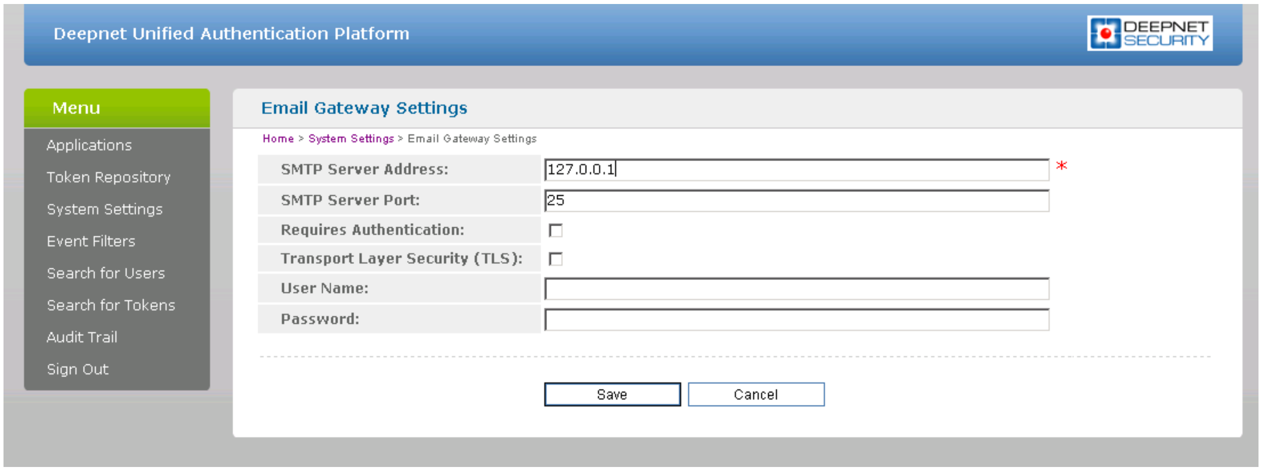
Internal

Server Address:	deepnetserver *
Server Port:	8081 *
Use SSL:	☐

RAS Publishing Agent will communicate with the Authentication Server. It is highly recommended to have this behind a Firewall for security reasons. Make sure that the **Server Address** and **Server Port** are correct.

Gateways

Email or SMS Gateways must be configured correctly so that the Deepnet server is able to send information, such as Activation codes, to the users.



Email Gateway Settings

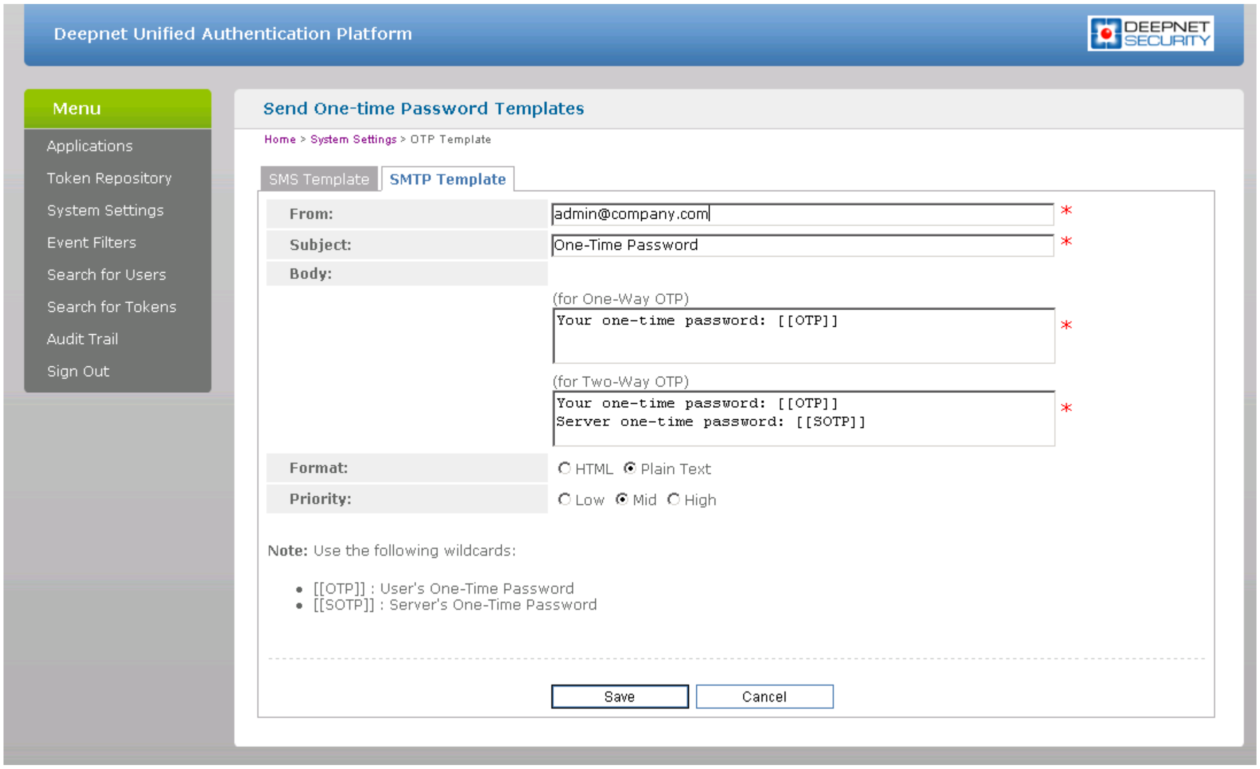
Home > System Settings > Email Gateway Settings

SMTP Server Address:	127.0.0.1 *
SMTP Server Port:	25
Requires Authentication:	☐
Transport Layer Security (TLS):	☐
User Name:	
Password:	

The E-Mail Gateway and/or SMS Gateway must be configured to be able to send messages to the user. Enter the **SMTP Server Address** and **SMTP Server Port** of the server which will be used by the Deepnet Unified Authentication to send e-mails. Remember to enter any username or password used for the SMTP server.

Templates

Templates are used to set the structure of e-mails and SMS messages sent by the server. The SMS template allows you to set the text for the **Sender** field, the message content and an optional subject. Make sure that you use the preset wildcards to send unique information such as the One-Time Password ([[OTP]]).



From: admin@company.com *

Subject: One-Time Password *

Body:

(for One-Way OTP)

```
Your one-time password: [[OTP]]
```

(for Two-Way OTP)

```
Your one-time password: [[OTP]]
Server one-time password: [[SOTP]]
```

Format: ○ HTML ● Plain Text

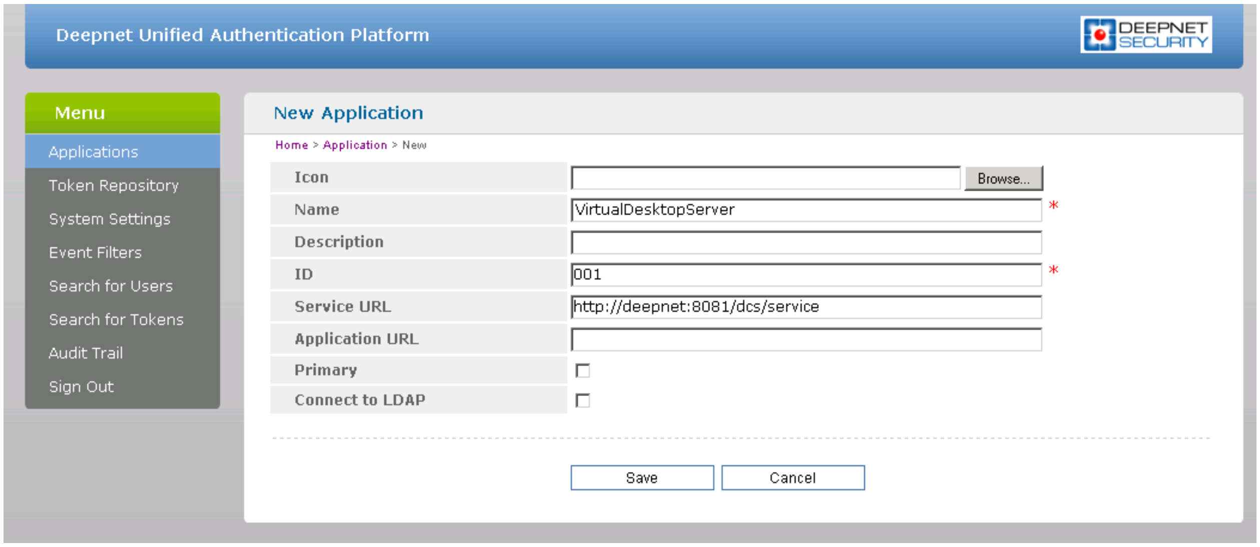
Priority: ○ Low ● Mid ○ High

Note: Use the following wildcards:

- [[OTP]] : User's One-Time Password
- [[SOTP]] : Server's One-Time Password

The E-mail template allows you to set the e-mail address that the user can reply to. This should be set to the administrator's e-mail. You can also set the e-mail's **Subject**, **Priority** and **Format**. The **Body** contains the actual content of the e-mail which should include the preset wildcard for the unique information along with a message.

Applications



New Application

Icon	
Name	VirtualDesktopServer *
Description	
ID	001 *
Service URL	http://deepnet:8081/dcs/service
Application URL	
Primary	□
Connect to LDAP	□

Click on **New** to add a new application. From the new form that loads you only need to set a **Name** and an **ID**. Once this is done, click **Save** to save your settings.

Token Repository

If using hardware tokens such as SafeID the token information must first be imported using the XML file provided. Click on **Import** and browse for the XML file provided. After the XML file has been imported each hardware token must be assigned to a user.

Configuring Parallels RAS for Deepnet

List of Supported Tokens

- SafeID
- FlashID
- MobileID
- QuickID
- GridID
- SecureID (RSA)
- DigiPass (Vasco)

Connect to Deepnet Unified Authentication

1 In the RAS Console, select the **Connection** category and then click the **Second Level Authentication** tab.

2 In the **Provider** drop-down list, select **Deepnet** and click the **Settings** button. The **Deepnet Properties** dialog opens.

3 On the **Connection** tab page, enter the server name and port that you saved while setting up your Authentication Sever. By default, the port number is set to 8080. Click on **Check Connection** to test that your Authentication Server can be reached. You can choose to connect over SSL to your Deepnet server.

4 Click the **Application** tab page.

5 Select the application profile that will use Deepnet to authenticate its users. You can also create an application which will be added on the Deepnet server.

6 The **Default Domain** field enables you to choose the default domain user for authentication and when users are added. Any Deepnet user accounts imported or verified will be done so using this default domain.

7 Select the **Use LDAP** option when importing Deepnet user accounts and a group that contains other sub-groups.

8 Click the **Import Deepnet user accounts…** button to automatically add the specified users/groups to the Deepnet application.

9 Click the **Verify Deepnet user account names** button to check that all users in the Deepnet application are in the following format: \\domain\username. Users added in the format of username@domain will be automatically changed to the appropriate format and users without a domain will have the default domain assigned to them.

10 Click the **Authentication** tab page.

11 In the **Mode** drop-down list, select the mode how you want your users to be authenticated:

- **Mandatory for all users** means that every user using the system must log in using two-factor authentication.
- **Create token for Domain Authenticated Users** will allow RAS Application Server to automatically create software tokens for Domain Authenticated Users. Choose a token type from the drop down list. Note that this option only works with software tokens.
- **Use only for users with a Deepnet account** will allow users that do not have a Deepnet account to use the system without have to login using two-factor authentication.

12 In the **Allow Channels** section, you can specify what channels are available to the user to activate the token or when requesting a Quick ID OTP. For example, if you select **Email**, the activation code can be sent only via email. If you select **SMS**, the activation code is sent via SMS.

Creating User Accounts on Deepnet

When adding new user accounts on Deepnet, it is important that the domain name is included with the **Login Name** of the user, therefore the entry should be in the following format: \\domain\username.

Users created automatically by Parallels applications are already in that format but users imported from the Deepnet console must be corrected.

To correct the usernames:

1 Open the **Deepnet Properties** dialog (**Connection** > **Second Level Authentication** > **Settings**).

2 Select the **Application** tab.

3 Click the **Verify Deepnet user account names** button.

Note that users added in the format of username@domain will be automatically changed to the appropriate format (\\domain\username).

Connecting to a RAS Farm with Deepnet

Parallels Client

Once Deepnet is enabled, the users will have two-factor authentication. If using software tokens such as QuickID the administrator does not have to create a token for each user. RAS Publishing Agent will automatically create the token when the user tries to log in for the first time.

When a user tries to access a Parallels Connection from Parallels Client, he/she is first prompted for the Windows username and password. If the credentials are accepted, RAS Publishing Agent will communicate with the Deepnet server to create a unique token for that user.

The token then needs to be activated. Click on a button to send the activation code by e-mail or by SMS depending on the channel selected when configuring Authentication section. A message will then be sent containing the token activation code which will need to be inserted in the **Activation code** text box.

If using MobileID or FlashID, an email about where you can download the appropriate software will be sent to the user.

If using QuickID tokens, the application will ask for a One-Time Password which is sent by e-mail or SMS.

If using a GridID, the user is given the opportunity to print the grid from the client itself. Note that this is only available the first time the user logs on.

Parallels Web Portal

If Deepnet Unified Authentication is enabled, logging into Parallels Web Portal also requires Second-Level Authentication.

Working with DualShield

DualShield 5.6+ Authentication Platform

This section explains how to integrate Deepnet DualShield Authentication Platform 5.6 or higher with Parallels Remote Application Server 10.6 or higher. If using any other version prior to the stated version please use RADIUS interface.

You may also read the following documentation on DualShield Authentication Platform:

1. DualShield Authentication Platform – Installation Guide
2. DualShield Authentication Platform – Quick Start Guide
3. DualShield Authentication Platform – Administration Guide

List of Supported Tokens by Parallels Remote Application Server

MobileID (FlashID is not integrated with MobileID)

1. QuickID
2. GridID
3. SafeID
4. SecureID (RSA)
5. DigiPass (Vasco)

If using hardware tokens such as SafeID the token information must first the XML file provided. Click on 'Import' and browse for the XML file provided. After the XML file has been imported each hardware token must be assigned to a user.

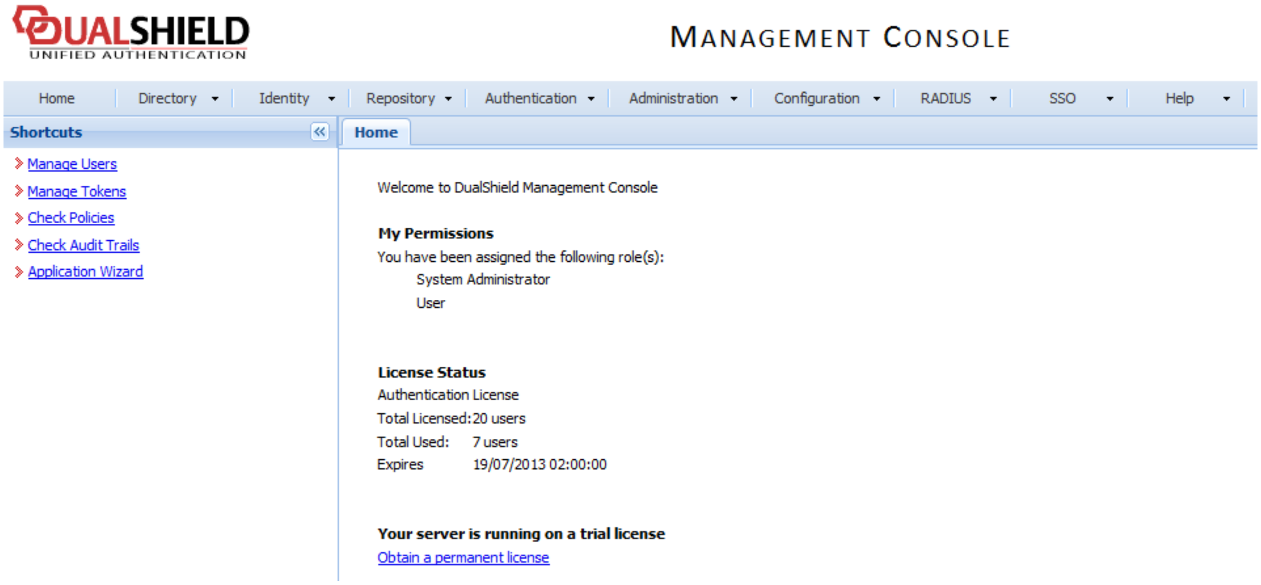
In this section:

- Configuring DualShield 5.6+ Authentication Platform (p. 222)
- Configuring Parallels Remote Application Server to Use DualShield Authentication Platform (p. 226)
- Connect to a RAS Farm (p. 229)
- Parallels Web Portal (p. 229)

Configuring DualShield 5.6+ Authentication Platform

After following all the specified steps in "DualShield Authentication Platform – installation Guide" a URP is automatically opened on your internet browser (http:// LOCALHOST:8073) which allows you to logon to the Management Console of DualShield.

Login in to the DualShield Management Console with the default credentials (User: sa, Password: sa). You will be prompted to change the default password.



Welcome to DualShield Management Console

My Permissions
You have been assigned the following role(s):
System Administrator
User

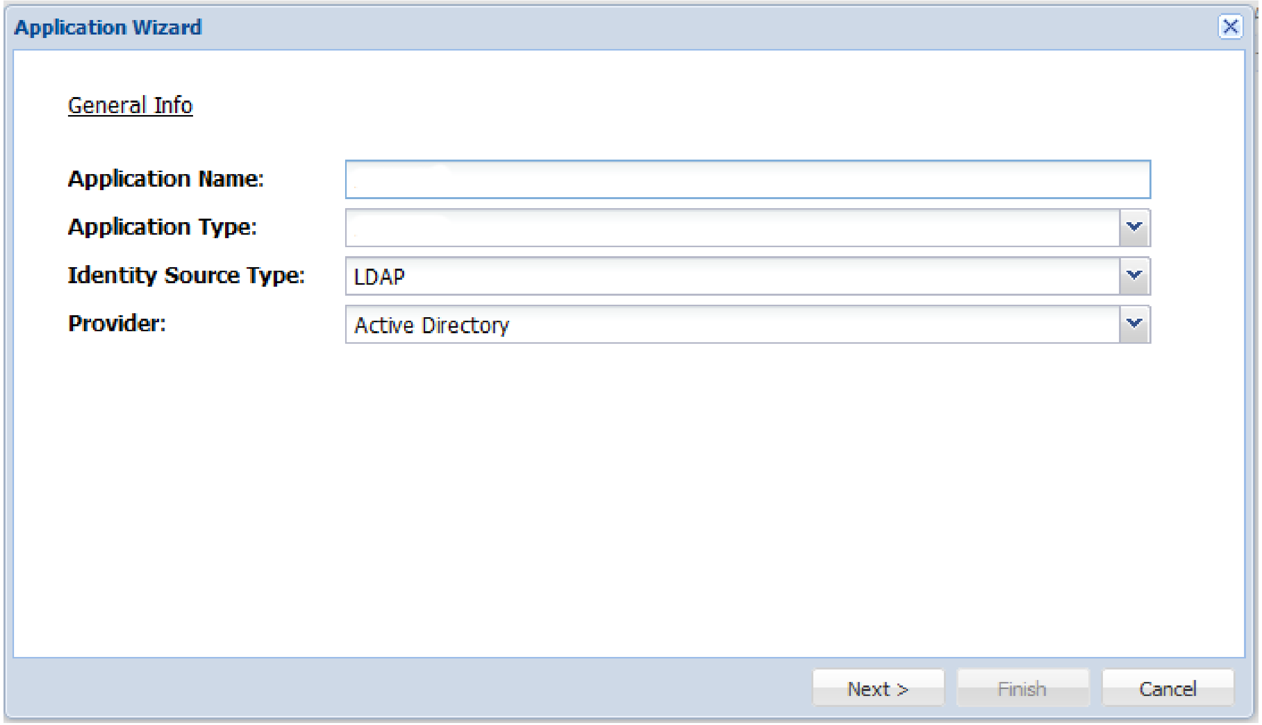
License Status
Authentication License
Total Licensed: 20 users
Total Used: 7 users
Expires 19/07/2013 02:00:00

Your server is running on a trial license
Obtain a permanent license

Applications are set to provide a connection to realm, as the realm contains domains of users who will be allowed the access to the application.

Realm is set for multiple domain users to be able to access the same application.

You need to create an Application which Parallels Remote Application Server will communicate with. Click on **Authentication** > **Application Wizard** and enter the information shown below and press **Next**.



Application Wizard

General Info

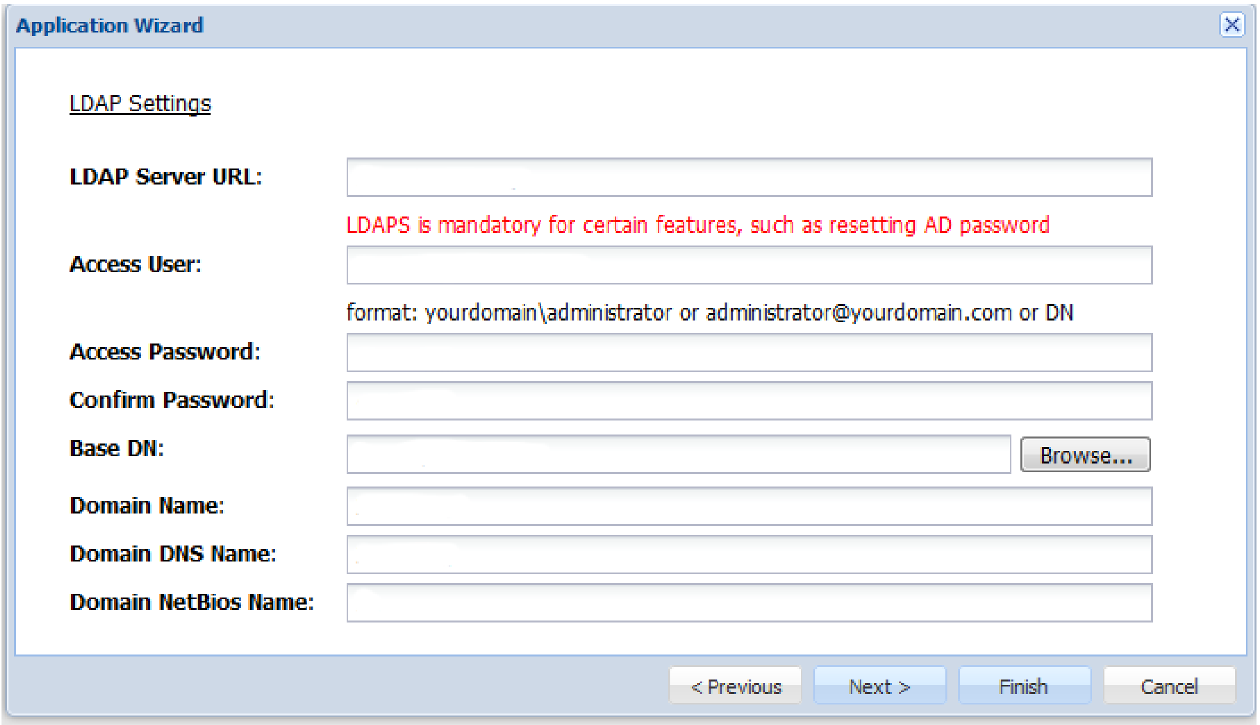
Application Name:

Application Type:

Identity Source Type: LDAP

Provider: Active Directory

Specify the LDAP Server settings as shown below and press **Finish.**



LDAP Settings

LDAP Server URL:

LDAPS is mandatory for certain features, such as resetting AD password

Access User:

format: yourdomain\administrator or administrator@yourdomain.com or DN

Access Password:

Confirm Password:

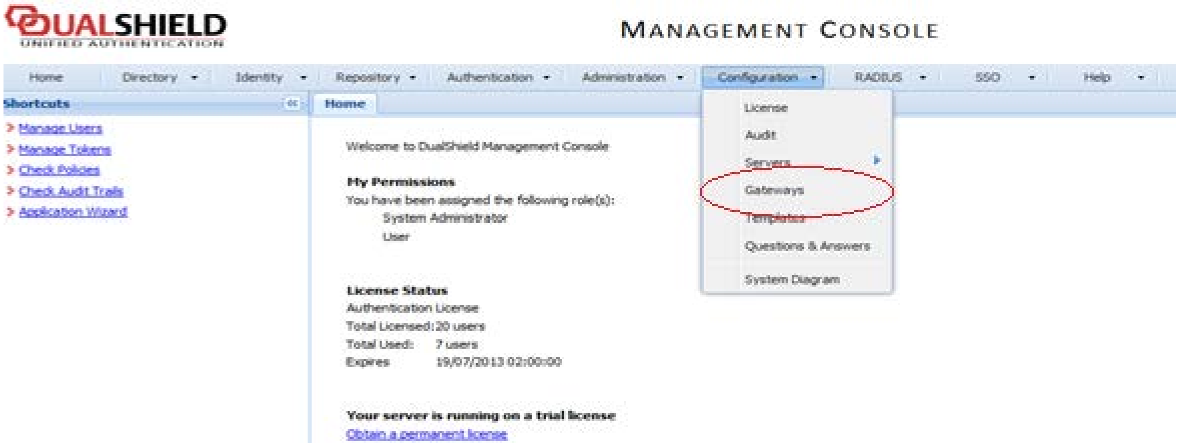
Base DN:

Domain Name:

Domain DNS Name:

Domain NetBios Name:

After you have configured the application you need to configure an Email or SMS gateway which are used by DualShield server to communicate with the end user. In this document we will be using an Email gateway. Select Gateways from the Configuration menu.



Welcome to DualShield Management Console

My Permissions

You have been assigned the following role(s):

System Administrator

User

License Status

Authentication License

Total Licensed: 20 users

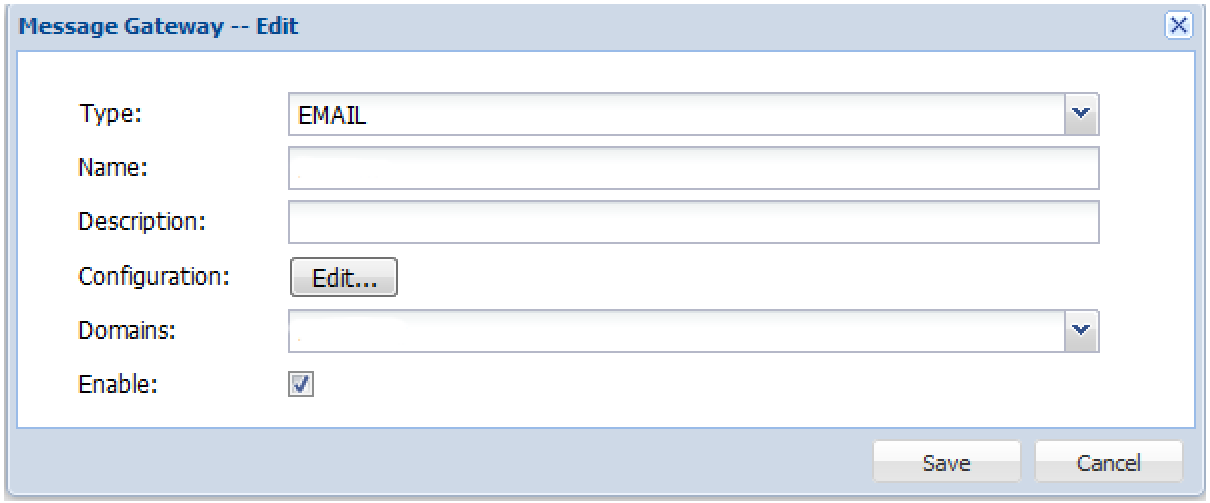
Total Used: 7 users

Expires 19/07/2013 02:00:00

Your server is running on a trial license

Obtain a permanent license

Configure your email gateway.



Message Gateway -- Edit

Type: EMAIL

Name:

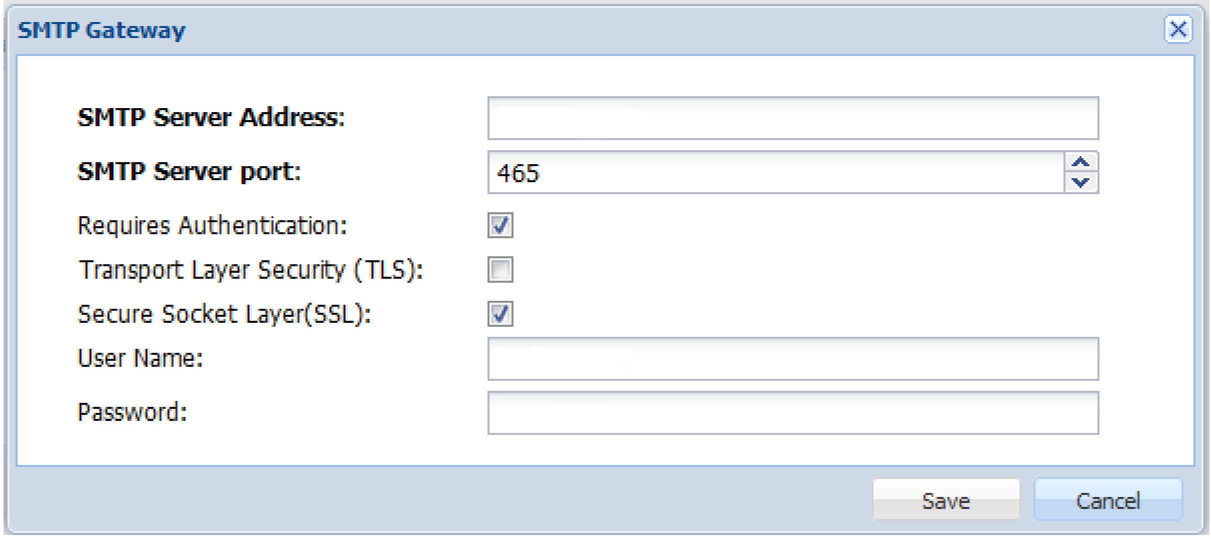
Description:

Configuration: Edit...

Domains:

Enable: ☑

Click **Edit** to enter your SMTP server information



SMTP Gateway

SMTP Server Address:

SMTP Server port: 465

Requires Authentication: ☑

Transport Layer Security (TLS): ☐

Secure Socket Layer(SSL): ☑

User Name:

Password:

Configuring Parallels RAS to Use the DualShield Authentication Platform

To begin:

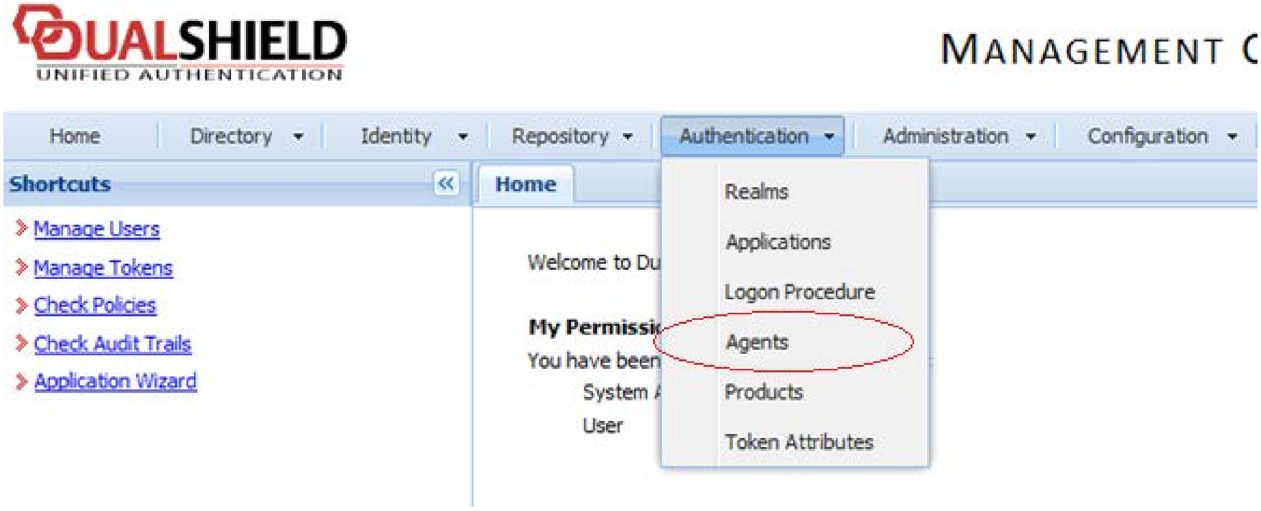
1 In the RAS Console, navigate to the **Connection** / **Second Level Authentication** tab page.

2 In the **Provider** drop-down list, select **Deepnet**.

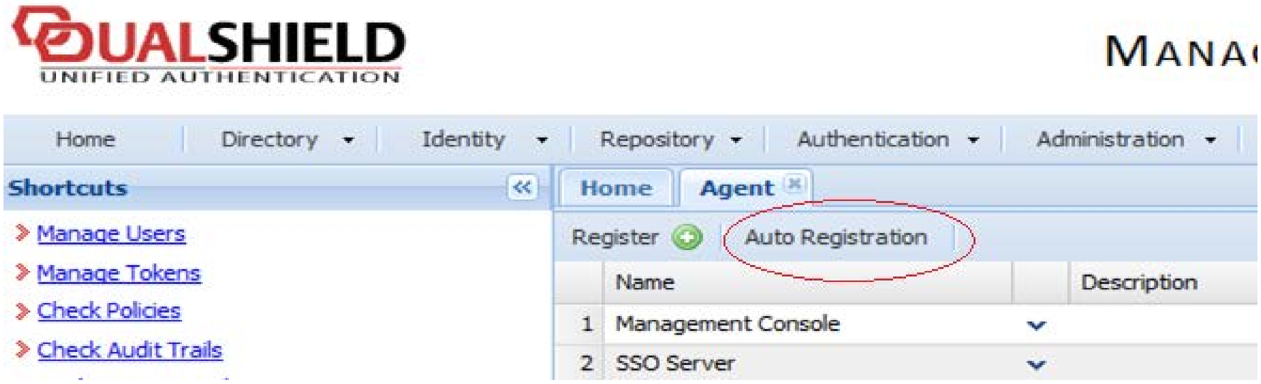
3 Click the **Settings** button.

4 Click the **Check Connection** button to test that the authentication server can be reached and to verify that the RAS Console is registered as a DualShield agent. If you see the "DeepNet server not valid" message, you have either specified an incorrect server information or you need to allow auto registration of the Parallels components as a DualShield agent.

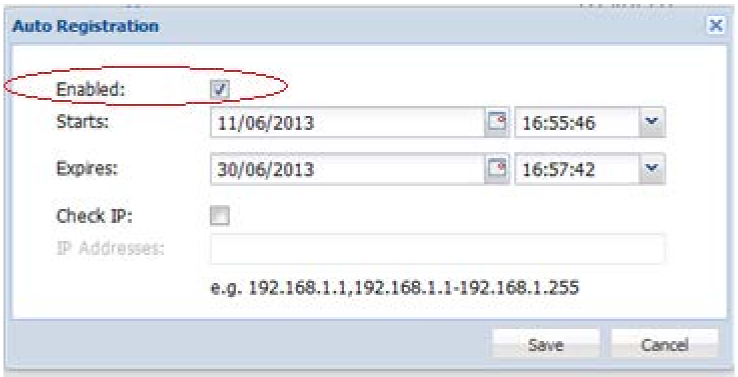
5 Go back to the DualShield Management Console and select **Agents** from the **Authentication** menu as shown below.



6 Select **Auto Registration**.



7 Select the **Enabled** option and set the date range.



Auto Registration

Enabled: ☑

Starts: 11/06/2013 16:55:46

Expires: 30/06/2013 16:57:42

Check IP: □

IP Addresses:

e.g. 192.168.1.1,192.168.1.1-192.168.1.255

8 Once the Agent Auto Registration is set, go back to the RAS Console and select **Yes**. You should see a message that the Dual Shield agent has been successfully registered.

Please note that All RAS Publishing Agents must be registered with Deepnet DualShield server. If you are using Backup Publishing Agents, you need to close all open windows until you can press **Apply** in the RAS Console. This will inform all the agents to self-register as DualShield agents.

9 In the Deepnet Properties dialog, click the **Applications** tab and browse for the Application name previously created from the DualShield Management Console.

10 Click the **Authentication** tab and select how you want your users to be authenticated:

- **Mandatory for all users** means that every user using the system must log in using two-factor authentication.
- **Create token for Domain Authenticated Users** will allow Parallels Remote Application Server to automatically create software tokens for Domain Authenticated Users. Choose a token type from the drop down list. Note that this option only works with software tokens, such as QuickID and MobileID
- **Use only for users with a DualShield account** will allow users that do not have a DualShield account to use the system without have to login using two-factor authentication.

11 Go back to the **Connection** > **Second Level Authentication** tab page.

12 In the Exclusion section, specify the exclusion rules:

- **User / Group exclude list** allows you to add users or groups within your active directory that will be excluded from using DualShield Authentication.
- **Client IP exclude list** allows you to add IP addresses or a range of IP addresses that will be excluded from using DualShield Authentication.
- **Client MAC exclude list** allows you to add MAC addresses that will be excluded from using DualShield Authentication. You can also specify a MAC address range using double question marks as a wildcard in any part of the address. For example, 00-14-22-01-23-??, 00-14-22-01-??-??, or 00-14-22-??-??-??.
- **Connection to the following Gateway IPs** allows you to set a Gateway where users connected to the Gateway will be excluded from using DualShield Authentication.

Connect to a RAS Farm

Parallels Client

Once DualShield has been enabled the users will have two-factor authentication. If using software tokens such as QuickID the administrator does not have to create a token for each user. RAS Publishing Agent will automatically create the token when the user tries to log in for the first time.

When a user tries to access a RAS Connection from Parallels Client, he/she is first prompted for the Windows username and password. If the credentials are accepted, RAS Publishing Agent will communicate with the DualShield server to create a unique token for that user.

If using MobileID or QuickID an email about where you can download the appropriate software will be sent to the user.

If using QuickID tokens, the application will ask for a One-Time Password which is sent by e-mail or SMS.

When asked for OTP, enter the One-Time Password to log into the Parallels ApplicationServer XG Gateway.

Parallels Web Portal

If DualShield Unified Authentication is enabled, logging to Parallels Web Portal also requires Second-Level Authentication.

CHAPTER 19

Managing Parallels Remote Application Server

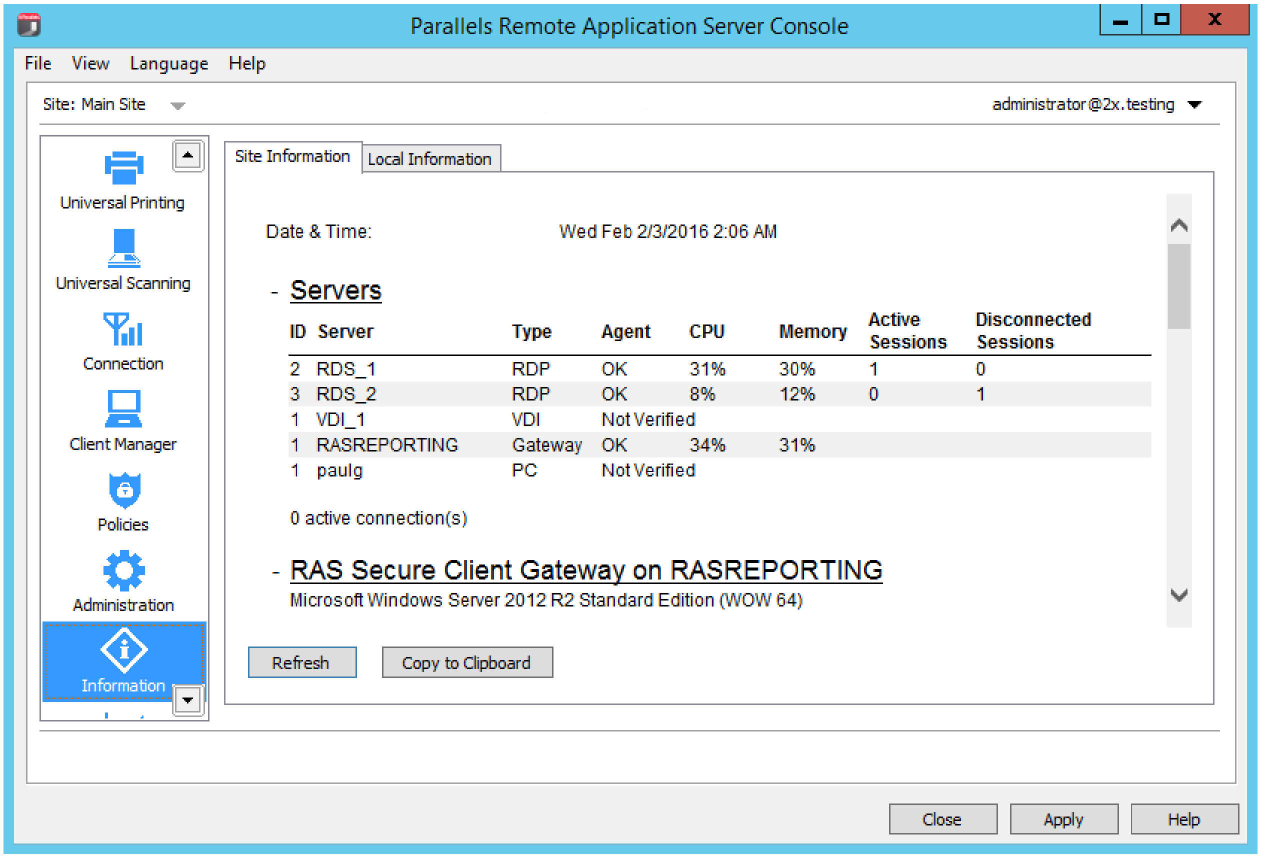
This chapter describes general Parallels RAS management tasks, including farm status monitoring, license management, user session management, performing backups, and others.

In This Chapter

Parallels Remote Application Server Status

The Parallels Remote Application Server has several features which allow you to monitor the activity on the farm and configure system notifications and several other options.

To view the site information, in the RAS Console, select the **Information** category.



Date & Time: Wed Feb 2/3/2016 2:06 AM

- Servers

ID	Server	Type	Agent	CPU	Memory	Active Sessions	Disconnected Sessions
2	RDS_1	RDP	OK	31%	30%	1	0
3	RDS_2	RDP	OK	8%	12%	0	1
1	VDI_1	VDI	Not Verified				
1	RASREPORTING	Gateway	OK	34%	31%		
1	paulg	PC	Not Verified				

0 active connection(s)

- RAS Secure Client Gateway on RASREPORTING

Microsoft Windows Server 2012 R2 Standard Edition (WOW 64)

Review the information provided on the **Site Information** page, including available servers, their types, Agent status, CPU utilization, etc. The page also shows the RAS Secure Client Gateway information and other relevant info.

The **Local Information** tab pages shows the health of the RAS server host where the RAS Console is running.

Licensing

The **Licensing** category allows you to view and manage your Parallels Remote Application Server license(s).

To manage your license(s), in the RAS console, select the **Licensing** category. The **License Details** tab page in the right pane displays the current license information.

The **View Active Users** button opens a dialog where you can view currently active users and license usage. Use the toolbar buttons to refresh the list and to copy the information to the clipboard.

The **Manage license** button allows you to switch to a new Parallels My Account and to activate Parallels Remote Application Server using a different license key. Click the button to open the **Sign in to Parallels My Account** dialog. This is the same dialog you used when you signed in to Parallels My Account the first time.

If you would like to register a new Parallels My Account, click the **Register** button, fill in the registration form and then click **Register** to create an account. If you now sign-in using the new account, you'll have to activate Parallels Remote Application Server using a different license key, which you must purchase and register in Parallels My Account.

To activate Parallels Remote Application Server using a different license key:

1. In the **Sign In to Parallels My Account** dialog, provide the email address and password you used to register your account and click **Sign In**. You'll see the **Activate Product** dialog.
2. Select the **Activate using license key** option and enter the key in the field provided. You can click the button next to the field to see the list of subscriptions and/or permanent license keys you have registered with your Parallels My Account. If the list is empty, it means that you don't have any subscriptions or license keys and need to purchase one first.
3. To purchase a subscription online, click the **Purchase a license** link.
4. You can also activate a trial version of Parallels Remote Application Server by selecting the **Activate trial version** option.
5. After entering a license key (or selecting to activate a trial version), click **Activate**. You should see the confirmation message that your Parallels Remote Application Server was activated successfully.

Managing Sessions

The session management functionality allows you to view and manage RAS sessions on the host and sites.

To manage sessions, in the RAS Console, select the **Administration** category and then click the **Session Management** tab in the right pane. The tab page displays the list of current sessions and includes the following info for each session:

- **Server** — host server name.
- **Session ID** — RAS session ID.
- **User** — session owner.
- **Protocol** — protocol used (RAS console, Remote Desktop Connection).
- **State** — session state (Idle, Active, Disconnected).
- **Logon Time** — last date and time the user logged on.
- **Session Length** — total sessions duration.
- **Idle Time** — total session idle time.

- **Type** — session type (Admin, Published Application, Published Desktop).
- **Resolution** — client screen resolution.
- **Color Depth** — client display color depth.
- **Device Name** — client device name.
- **IP Address** — client IP address.

You can sort the **Sessions** list by any session property. Simply click on a desired column heading to sort in ascending or descending order.

You can also filter the list using a single or multiple session properties as a criteria. To do so, click the magnifying glass icon (right-hand corner, just above the list) and then type a desired string in a desired column. The list will be filtered as you type.

To manage a session, select it in the list and then use the **Tasks** drop-down menu (or right-click a session) to select an action you'd like to perform. Note that you can select more than one session if you wish. The **Tasks** drop-down menu includes the following options:

- **Disconnect** — disconnects selected session(s).
- **Log Off** — logs off session owner(s).
- **Send Message** — opens a dialog where you can type and send a message to session owner(s).
- **Remote Control** — allows you to remotely control the selected user session.

The **Show running processes** option opens the **Running Processes** dialog where you can view running processes for selected session(s). In the dialog, use the **Show processes from** drop-down menu to customize the list using the following options:

- **Selected session** (default) — displays processes for the selected session.
- **Selected Server** — displays all running processes for the server on which the selected session is running.
- **All Servers** — displays all running processes for all available servers.

The **Tasks** drop-down menu in the **Running Processes** dialog has the following options:

- **Refresh** — refreshes the list.
- **Kill Process** — kills the selected process.
- **Go To Published Item** — brings up the main RAS console window and navigates to the corresponding published resource (the option is only enabled if a running published resource is selected in the list).
- **Disconnect** — disconnects the remote user from the site.
- **Log Off** — logs off the remote user.
- **Send Message** — sends a message to the remote user.

Configuring Monitoring Counters and Email Alerts

On the **Notification** tab page in the **Administration** category, you can enable, disable, and configure event notifications, which are used to alert the administrator about system events via email. These settings apply to all servers in the farm.

Notifications for the following events are available:

- CPU utilization on a server is higher than the configured amount.
- Memory utilization on the server is higher than the configured amount.
- Number of sessions connected to a server is higher than the configured amount.
- Number of disconnected sessions is higher than the configured amount.
- RAS Terminal Server Agent has disconnected from or reconnected to the farm.
- License-related events. One notable event here is your license usage reaching a predefined threshold. Specifically, when your license usage reaches 90% of all available licenses, you will receive an email, so you have time to decide whether you have enough licenses or need to add more. Other events include license activation/deactivation, license expiration, grace period starting/ending, license information changes, problem communicating with the licensing server.

In this section:

Configuring Monitoring Counters

To configure event notifications:

1. In the RAS Console, select the **Administration** category and then click the **Notifications** tab.
2. Select an event and specify a value in the **Parameters** column (right-click an event and click **Edit**). Note that with some events, the **Parameter** field is not used and is disabled.
3. In the **Notification Interval** field, specify the interval (in minutes) at which the notifications will be emailed to the administrator.

Please note that the mailbox should be configured in the RAS Console for the outgoing email functionality to work. This mailbox is usually set up when you run the RAS Console for the first time and then use the **Start** category to set up your first RAS environment. If you omitted this step, you can set up a mailbox here. The mailbox setup procedure is described in the section that follows this one.

Configuring SMTP Server Connection for System Notifications via Email

The **Mailbox Setup** tab page in the **Administration** category allows you to configure an SMTP server for outgoing emails. The SMTP server is required for the administrator to receive system event alerts (as described in the previous section) and to send invitation emails to the users.

To configure an SMTP server:

1. In the RAS Console, select the **Administration** category and then click the **Mailbox Setup** tab.
2. In the Mailbox Server field, type your mail server FDQN or IP address.
3. In the Sender Address field, type the sender address.
4. Select the **Use TLS / SSL** and **SMTP server requires authentication** options if needed (type the SMTP server username and password in the fields provided).
5. The **Test Email** section can be used to test your SMTP server configuration. You can type more than one email address, separated by a semicolon. Click **Send Test Email** to test the settings.

Viewing Parallels RAS Configuration Changes

To view the list of all configuration changes that's been done to your installation of Parallels Remote Application Server:

1. In the RAS Console, select the **Administration** category and then click the **Settings Audit** tab.
2. Each entry in the **Settings audit** list corresponds to a task performed in the RAS Console by a Parallels Remote Application Server administrator.
3. To refresh the list, click the "Refresh" icon (two arrows in a circle).
4. Double-click an entry in the list to view the corresponding configuration task details.

Configuring Auditing Logging

By default, auditing is enabled on the Parallels Remote Application Server. Auditing can be enabled per server or per site, as described in the subsections that follow this one.

To enable and configure auditing in the RAS Console, navigate to **Farm** / **Site** / **Settings**.

The auditing log contains information about opened sessions and the total time for each session.

Auditing logs can be configured on the **Auditing** tab page:

- The **Filtering the following processes** list contains processes that will NOT be included in the audit log file produced when the **View Audit** button is clicked. To add or remove a process, click **Tasks** > **Add** or **Tasks** > **Delete** respectively. To rename a process, click **Add** > **Properties**. To reset the entire list and display the default processes, click **Add** > **Default**.
- To enable or disable auditing, select **Enabled** or **Disabled** in the **Auditing** drop-down list.
- To view the log file, click the **View Audit** button.
- To clear the log files, click the **Clear Audit File** button.
- Use the **Backup log file** drop-down list to specify how often the log file should be backed up. Backup log files are stored in the same directory as other log files. Backup log files can be viewed from the **Backups** node in the RAS Monitor application.

In this section:

Parallels Remote Application Server Logging Per Server

Parallels Remote Application Server logs are used by Parallels Support for troubleshooting purposes, therefore this type of logging should only be enabled when instructed.

To manage troubleshooting log gathering for a particular server:

1. In the RAS Console, navigate to **Farm** / Site / **Terminal Servers**.
2. Global logging is enabled by default. You can choose whether to use the default (standard) or extended logging.
    - To enable extended logging for a server, right-click the server and choose **Logging** > **Enable extended logging**. If you open the menu again, a check mark is displayed in front of the **Enable extended logging** item to indicate that it is turned on.
    - To disable extended logging, click **Logging** > **Enable extended logging** again. If you open the menu now, the check park should no longer appear.
3. To view the log file for a server, right-click the server and choose **Logging** > **Request Logs**.
4. To clear a server log file, right-click the server and then choose **Logging** > **Clear Log File**.

Parallels Remote Application Server Logging Per Site

Global logging is always enabled for all servers in a given site, but you have an option to enable or disable extended logging. Extended logs contain more data than default logs and can provide more information needed to resolve an issue or a problem. Please note that extended logs take more disk space compared to default logs.

To configure extended logging globally:

1 In the RAS Console, navigate to **Farm** / **Site** / **Settings** and click the **Global Logging** tab.

2 The tab page lists servers for which you can configure extended logging. The list has the following columns:

- **Server** — server name.
- **Type** — server type (e.g. Terminal Server, Publishing Agent, Gateway).
- **State** — logging state (level). Can be one of the following: Default and Extended (see the first paragraph above).

3 To enable or disable extended logging, select a server in the list and click the **Extended Logging** action item. The **State** column indicates which level is currently set. To switch the level again, click the **Extended Logging** item one more time.

4 The **Retrieve** action item retrieves all logs and saves them to a file (you'll need to specify a file name and location).

5 The **Clear** action item clears all logs. Note that once you click this item, the logs will be cleared with no additional warning.

Maintenance and Backup

Keeping Parallels Remote Application Server Up to Date

By default, Parallels Remote Application Server will check for updates each time the RAS Console is started. To disable checking for updates, select the **Administration** category and click the **Software Update** tab. Clear the **Check for updates when launching Parallels Remote Application Server Console** option. To check for updates manually, click the **Check Now** button.

On the same **Software Update** tab page, a read-only list of modules used by the Parallels Remote Application Server is displayed. You can ignore it unless specifically asked by the Parallels Support.

Backing Up the Parallels Remote Application Server Configuration

To backup the Parallels Remote Application Server farm configuration:

1 Select the **Administration** category and then click the **Backup** tab.

2 Click the **Export** icon.

3 You'll see a message box informing you that all sites will be synchronized before performing the export procedure. Click **Yes** to continue with export or click **No** to abort it.

4 Specify the file name and target folder and click **Save**.

Note: A Parallels Remote Application Server configuration backup will only contain the actual configuration. Non-related configuration objects such as downloaded OS, etc. are not included in the backup.

To restore a configuration from a backup, click the **Import** icon and follow the instructions.

Exporting and Importing Farm Settings via Command Line

A PowerShell interface is included in the Parallels Remote Application Server installation allowing you to export and import farm settings. One of the uses of this interface is running automated tests. Specific configurations can be created, exported, and then imported for specific test scenarios. You can also use it with Windows task scheduler for regular backups of farm settings.

Installing the Interface

First, you need to obtain the `RAS_PS_Interface.zip` file from the Parallels website and then do the following:

1. Extract the `RAS_PS_Interface.zip` archive to your local hard drive.
2. Start the 64-bit version of PowerShell.
3. Change directory to where you extracted the archive.
4. Run the following command:

```
Import-Module .\PSInterface.dll
```

Using the Interface

To export farm settings, execute the following command:

```
Get-Settings
```

To get help on how to use `Get-Settings`, run the following command:

```
help Get-Settings
```

To import farm settings:

```
Set-Settings
```

To get help:

```
help Set-Settings
```

Problem Reporting and Troubleshooting

If you are experiencing an issue with Parallels Remote Application Server, you can search for a solution right from the RAS Console. If you can't find a solution, you can send a support request to Parallels. This section describes how to accomplish these tasks.

Search for a Solution

To search for a solution from the RAS Console:

1 In the console, click **Help** on the main menu and choose **Troubleshooting and Request Support**.

2 The **Troubleshooting** dialog opens.

3 In the **Select Category** drop-down list, select a category you are having a problem with. The area in the middle of the dialog will be populated with a list of existing KB articles related to that category.

4 Click an article of interest to open and read it in a web browser.

5 You can also click the **Knowledge Base** link or the **Forum** link to go to the Parallels knowledge base or the Parallels forum respectively.

Request Support

Note: A support request sent to Parallels automatically creates a support ticket, which is then sent to Parallels Support. Please note that if you don't have a current RAS subscription or a support contract, the ticket will NOT be created. In order to receive support, you will need to purchase a subscription or a support contract.

If no articles are found for a given category or if you didn't find a solution for your problem, you can send a request support to Parallels. When you do, the collected logging information is retrieved and attached to the email, so that Parallels Support can analyze it. Global logging for enabled by default. For more information, please see **Configuring Audit Logging**. (p. 235)

Note: If you already have a request support ticket, you can send just a system report to Parallels without creating an additional (and identical) ticket. See the **Send a Report** subsection below.

Before you request support, please make sure that you have a mailbox setup in the RAS Console. If you haven't set up a mailbox yet, please do it as follows:

1 In the RAS Console, navigate to **Administration** / **Mailbox Setup**.

2 Enter your outgoing email server information, your email address, and the security/authentication information if needed.

3 You can send a test email by entering an email address in the field provided and clicking the **Send Test Email** button.

To send a support request to Parallels:

1 In the **Troubleshooting** dialog, click the **Send Support Request** button.

2 The **Contact Support** dialog opens.

3 Enter your full name and your company name.

4 Enter the subject. This will be used as a subject in the email that will be sent to Parallels Support.

5 In the **Enter your query box**, describe the issue the best you can.

6 Use the **Attachment** field to attach a file to the email. Click the **[...]** button to browse for a file. You can attach a picture or any other file that you think might help the Parallels Support to find a solution. Please note that the log files and the Parallels Remote Application Server settings are collected and attached to the email automatically, so you don't have to do it yourself.

7 In the drop-down list at the bottom of the dialog, select whether you want to send the email or save it (including the automatically collected information) as a zip file.

8 Depending on the action selected in the previous step, click **Send** to send the email or **Save** to save it as a zip file on your local drive or a network folder.

Send a Report

If you already have a support request ticket, you can send just a system report to Parallels without creating a new ticket.

To send a report:

1 In the console, click **Help** on the main menu and choose **Upload System Report to Parallels**.

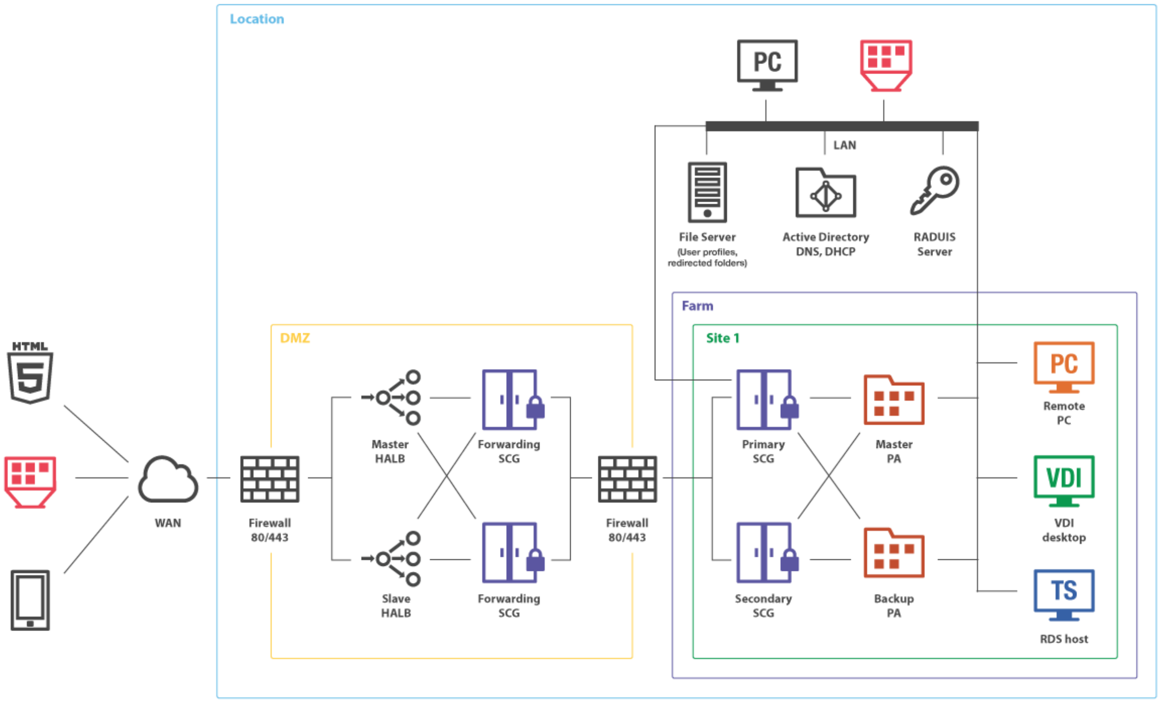
2 A dialog opens displaying the progress bar.

3 Once the system report data is collected and sent to Parallels, a message box is displayed containing the report number.

4 Click **OK** to finish.

CHAPTER 20

Port Reference



In Dual DMZ configuration with HALB for Forwarding Parallels Secure Client Gateways and Multiple Parallels Secure Client Gateways, the redundant Parallels Publishing Agent and mixed desktop scenario, the following port are used:

On the Firewall facing the Internet:

- TCP 80, 135, 445, 49179
- UDP 80 (if RDP-UDP is enabled)
- TCP 443 (if SSL is enabled)
- UDP 443 (if SSL and RDP-UDP is enabled)
- TCP 3389 (if RDP Load Balancing is enabled)

On the HALB appliance externally:

- TCP 80
- TCP 443 (if SSL is enabled)

On the HALB appliance internally:

- TCP 80
- TCP 443 (if SSL is enabled)
- TCP 31006
- UDP 31006
- RAW 112 (VRRP)

Forwarding Parallels Secure Client Gateways communicates via:

- TCP 80
- UDP 80 (if RDP-UDP is enabled)
- TCP 443 (if SSL is enabled)
- UDP 443 (if SSL and RDP-UDP is enabled)
- TCP 3389 (if RDP Load Balancing is enabled)
- UDP 20000 (Gateway Lookup)
- UDP 20009 (if Client Manager is enabled)

Parallels Secure Client Gateways communicates via:

- TCP 80
- UDP 80 (if RDP-UDP is enabled)
- TCP 443 (if SSL is enabled)
- UDP 443 (if SSL and RDP-UDP is enabled)
- TCP 3389 (if RDP Load Balancing is enabled)
- UDP 20000 (Gateway Lookup)
- UDP 20009 (if Client Manager is enabled)
- TCP 20030
- TCP 20020 (HTML5)

Parallels Publishing Agents communicate via:

- TCP 20001 Redundancy Service. Communication with other Publishing Agents
- TCP 20002 Publishing Agent Service Port (communications with RAS Secure Client Gateways and the RAS Console)
- TCP 20003 Terminal Server Agent Port (communications with Terminal Server agents)
- TCP 20010
- TCP 20030 Communication between Publishing Agents running in the same site
- Outbound TCP 443- Communication with Parallels Licensing Server (https://ras.parallels.com)

- TCP 30008 Publishing Agent (RAS Console and Reporting)
- TCP 50005 Parallels Client (Client Manager, shadowing)

Parallels Terminal Server Agents communicate via:

- TCP 30004 Terminal Server Agent Communication Port
- UDP 30004 Terminal Server Agent Communication Port
- UDP 30004 Server for connection requests from PA
- TCP 30005 Server for internal commands (memshell)
- TCP 30004 Server for agent requests
- TCP 3389 Standard RDP Connections
- UDP 3389 Standard RDP Connections
- UDP 20003
- TCP 30005 Terminal Server Agent Communication Port (Shell + Printer Redirector)

Parallels VDI Agents communicate via:

- UDP 30004 Used when the VDI Agent is verified
- TCP 30006 VDI Agent Communication Port
- UDP 30006 VDI Agent Communication Port
- TCP 30007 VDI Agent Communication Port
- TCP 30009 VDI Agent Communication Port

Parallels Remote PC Agents communicate via:

- UDP 30004 Remote PC Agent Communication Port
- TCP 30005, TCP 30004
- TCP 3389 Standard RDP Connections
- UDP 3389 Standard RDP Connections

Parallels Client communicates via:

- TCP 80
- UDP 80 (if RDP-UDP is enabled)
- TCP 443 (if SSL is enabled)
- UDP 443 (if SSL and RDP-UDP is enabled)
- TCP 3389 Standard RDP Connections
- UDP 3389 Standard RDP Connections
- UDP 20009 Client Manager

Internal Firewall Ports:

- Remote Install Push/Takeover of Software: TCP 135, 445, 49179

For Active Directory and Active Directory Domain Services Port Requirements see this article:
https://technet.microsoft.com/en-us/library/dd772723%28v=ws.10%29.aspx

For Remote Application Server firewall requirements, see this article:
http://kb.parallels.com/en/123255

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